

THE BIG GAME OF
ASIA AND
NORTH AMERICA

A. J. McCoskey
Mr. Hallie
Chelmsford.

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THE GUN AT HOME & ABROAD

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THE GUN AT HOME & ABROAD

**The Big Game of Asia
and North America**

BY

D. CARRUTHERS
P. B. VAN DER BYL
LT.-COL. R. L. KENNION

J. G. MILLAIS
H. FRANK WALLACE
FORD G. BARCLAY



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**DEDICATED BY GRACIOUS PERMISSION
TO HIS MAJESTY KING GEORGE V**

PREFACE

THE immensity of the Asiatic Continent, and the great variety of race, climatic and physical conditions that it possesses, are reflected in the number of Authors who have here combined to describe the Big Game of Asia. No one hunter, however experienced, could have described this vast Continent from his own experience. The Authors who have contributed to this Work write entirely from personal knowledge, and from actual experience resulting from many years of travel and sport.

Mr P. B. Van der Byl devotes two chapters to the sport obtained in our great Indian Empire, and adds a comprehensive list of the game animals that inhabit the jungles of the plains and the forests and crags of the bordering mountain ranges. In another chapter he describes the Caucasus, of which he has an unequalled knowledge.

Lt.-Col. R. L. Kennion, who has had unique experiences with the Big Game of Persia, describes many little-known regions and some rare varieties of Wild Sheep and Gazelle inhabiting the land of Iran.

The remote and difficult hunting grounds of Western China are dealt with by Mr H. F. Wallace. No more interesting pages appear than those which are devoted to the rare Takin and the strange Serow. The numerous varieties of the Deer tribe inhabiting Asia are enumerated by the same Author.

Mr Douglas Carruthers takes up a wide field, and writes from personal acquaintance with Syria, Arabia, Asia Minor, Russian and Chinese Turkestan, Inner Asia and Mongolia. The great Wild Sheep—typical trophy, perhaps, of hunting trips in Asia—are described at length, and their numerous varieties called into notice. The various races of Elk and Reindeer in the Northern part of the Continent are dealt with by Mr J. G. Millais; of these he has made a special study; while Mr Ford Barclay graphically describes the chase of the long-haired or Manchurian Tiger, a rare and much-prized trophy.

Mr J. G. Millais describes the Big Game inhabiting the forest, plains, mountains and barren lands of North America. Unfortunately, the central portions of the North American Continent are no longer the happy hunting grounds they were thirty or forty years ago, but specimens of the Mule deer, the Antelope and the Wapiti may still be obtained, though not of such quality as those of the 'seventies and 'eighties.

The Northern and North-Western American Big Game hunting is to-day as good as ever it was, and the sportsman has as good a chance of obtaining large and even record specimens as formerly. Caribou, Moose and Grizzlies, all of great size, still exist in these Northern wilds and are the reward of hunters who can incur the expense of taking the long journey and can bear the cold and hardships of these inhospitable regions. When the war has ceased, North and Central Mexico also offer an excellent field to the enterprising hunter who is prepared to face some danger and a scarcity of water. Bear, Sheep and Deer are also numerous here.

PREFACE

An article on New Zealand by Mr H. F. Wallace is included in this volume. Mr Wallace gives a view of the sport to be obtained and notes the present condition of the herds which have been imported into the Island.

It will be seen that the Authors are authorities on their subjects, and give unstintingly of their great store of knowledge and their unique experiences in those distant lands.

The publishers desire to thank H.H. the Maharajah Gaekwar of Baroda, H.H. the Maharajah of Cooch Behar, the Right Hon. Lord Elphinstone, Sir Edmund G. Loder, Sir Thomas A. Salt, Colonel G. Houldsworth, Colonel Max Fleischmann, Lt.-Col. Montagu Cradock, C.B., Captain J. M. Stewart, Messrs Charles Arthur, Ford G. Barclay, Talbot Clifton, E. W. Dixon, Alfred Ezra, Charles Gairdner, P. N. Graham, C. V. A. Peel, William Blackwood and Sons, G. Cassell and Co., Horace Marshall and Sons, Rowland Ward, Ltd., and "Country Life" for their practical help with some of the illustrations.

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ASIA

INTRODUCTION

ASIA, although presumably the cradle of the human race and our original home, has received less attention from us than other more distant regions, and has often been passed by with unmerited neglect. Consequently she has kept her secrets from us more effectively than has any other continent and has retained her own atmosphere—unspoilt by the West—with better success than many far remote corners of the earth's surface.

With characteristic reticence Asia has withheld from us, until quite recently, a great deal of all she possesses in the way of an exceptionally abundant and remarkably interesting animal life. The outskirts of this vast continent have been known to the West from time immemorial, but the heart of the continent still holds many mysteries and is the ambition of many energetic travellers. In spite of her age Asia has been neglected, while the energies of wandering Britons have been concentrated upon younger and more "novel" regions such as Africa, with the result that the so-called Dark Continent has now been almost laid bare, while Asia still holds out opportunities and prospects to travellers in search of interest, to scientists in quest of knowledge, and to hunters desirous of obtaining strange beasts and fine trophies.

It is, of course, an immense field to describe, even from any one aspect—such as its sporting possibilities, and the species of big game it contains. Consider for one moment the varied character of this continent, which spreads for 5,000 miles from east to west and which covers 75 degrees of latitude north and south. Take note of the contrastive elevations of its land surface, from 1,300 feet below the level of the ocean to 29,000 feet above; of its mountain ranges, which run in unbroken chains for 2,000 miles, its inland lakes which are seas, its remarkable plateaux, such as the Pamirs and Tibet, which are tablelands hung in the sky at an average altitude of over 12,000 feet above the ocean.

What an immense variety of animal life must exist in such strange and varied regions. The Asiatic big game, which we are attempting to describe, range from the lands of greatest heat to the region of perpetual ice and

THE GUN AT HOME AND ABROAD

snow, both in vertical altitude and in high latitude. They have as their haunts tropical jungles and arid sand deserts, cold northern steppes, luxuriant Himalayan and temperate pine forests, desert mountains and Arctic tundra. No continent can approach Asia as regards the beauty and variety of the trophies she contains. The largest antlers, the most colossal horns of wild sheep, the biggest ibex are no small inducement to the hunter. The "father of all goats" and the "ancestral patriarch, perhaps, of all the flocks on earth" still hold their secret haunts in the heart of this great continent. There are the most superb and highly valued trophies such as the shaggy markhor and the *Ovis poli*; there are such rarities as the quaint takin, the saiga, the Arabian oryx and the tahr of Oman; the home of Père David's deer still lacks a finder; there are many other trophies that come from Asia still only to be found in one or two collections.

As a field for big game shooting, Asia holds out many attractions, for besides magnificent scenery, a healthy climate, far, remote and hostile regions to get to, unique and truly worthy beasts to hunt, and all the other various details that combine to make a trip "worth while," there is, besides, a peculiar interest attached to the East which goes far to alleviate the arduous, and often monotonous, traversing of great areas of otherwise uninteresting country. Historical interest, the existence of antiquities, even the decadent residue of ancient civilizations, the remnants of ancient cities, tottering kingdoms—the antique living into the present—all these are laid before the hunter in Asia, and a wealth of knowledge is offered to any traveller who even lands upon her shores. Herein exist the fascination of travel in Asia; one can study seriously or be merely interested, but one cannot under any circumstances be "bored." The labour of travel is tempered by innumerable pleasures, offering freely to all who travel intelligently, pleasures such as the perfect camping countries of Kashmir, Western Kansu, Asia Minor, the Caucasus and the Tian Shan; pleasure gained from penetrating wild and inhospitable regions and contact with their barbaric inhabitants, as in inner Arabia, Kurdistan, Eastern Persia, Afghanistan and the Tibetan borderlands; pleasures resulting from close communication with such amazingly interesting tribes as the Lolos of Eastern Tibet, the Kirghiz of the Pamirs, Mongolians and Tunguses of Upper Asia, Tadjiks, Persians, Arabs and Osmanlis. The wanderer may pass through many ancient cities—Baghdad, Bokhara, Damascus, Delhi, Agra, Pekin; he will find the unexcavated sites of others and see many



Photo by]

[Carruthers & Miller.

THE BARREN HEART OF ASIA.



Photo by]

[Mr G. Fenwick-Owen.

THE RUGGED DECLIVITIES OF EASTERN TIBET.

PLATE I.

INTRODUCTION

wonderful antiquities. Even these are all trifles—mere adjuncts to the main objects of his visit. For his real intent is the pursuit of some trophy upon which he has set his heart.

In this direction Asia offers many and varied hunting grounds, some old, many new, and all of them unspoilt. Even India, which has endured hard hunting by Englishmen for more than a century, has endured it without suffering much harm and destruction; there is still much to attract the hunter thither. As a whole, Asia is a new field, open to all who wish to try their luck. Vast areas have been scarcely touched at all; it would be quite easy to hunt ranges which no white hunter has ever desecrated; one could get into "new" country in a couple of weeks from London in certain portions of the Near East. On the other hand, the interior of Asia possesses hunting grounds which it is no small labour to reach. They are 1,500 miles from the sea, railways do not extend their tentacles to within 1,000 miles of them, laborious stages by slow methods have to be resorted to, the undertaking develops into an expedition which has to be carefully thought out and planned.

Hunting in Asia has many contrasts, for you may have some very nice shooting in a month's holiday from London, journeys included, or you can choose a beast as your "lodestar" whose haunts it may take you six months to find. You *can* get into the heart of the continent in ten days, but you may not even be able to land on the coasts of Arabia. It is a six-weeks' hard journey over half a dozen high mountain ranges in order to reach Chinese Turkestan from India, but you can go in a cart all the way from Siberia to China with small cost and little trouble. There are no two districts alike, no two trips can be "run" in the same way, no two localities have the same conditions or are inhabited by the same game.

A whole volume could be written on Indian big game shooting, and not one word of it would apply to Tibet or Inner Asia. Persia is a region to itself, the Caucasus is another. Syria and Arabia hold unique conditions and a fauna which is African, Indian and European! A guide to the prospects of shooting in Mongolia in no way holds good for other parts of Western China, that great Empire alone could be divided up into several descriptive areas, and yet it is after all only a small corner of Asia.

There are great praises to be sung in favour of travel and sport in the East, and with all hypercriticism I cannot find many things that might

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detract from one's pleasure or take away from the enjoyment of hunting. For instance, except for certain prohibited areas, such as Bokhara, the Pamirs, Afghanistan, Butan, Nepal, and a few regions closed by reason of the fanatical and truculent inhabitants, such as inner Arabia and the upper defiles of the Salween and Mekong, the whole of the continent is open to any hunter who cares to procure either a Turkish, a Russian or a Chinese passport. There are no restrictions, no licences, no "limits." The prices remain for the most part as they were, the people are not spoilt, and, although difficulties are sure to be met with just because it is not hackneyed, any real traveller will appreciate the change after following other well-trodden routes. Nearly every class of hunter is catered for, except the butcher, perhaps, and the man who only wishes to cover his walls with heads. The type of hunting it offers to one might almost be described as the height of fastidiousness. Such are its attractions, and so rare the beauty of some trophies to be obtained, that men have been known to make a thousand-mile journey to get one beast, and to be thankful if they were lucky enough to secure even the one. A 62-inch *Ovis ammon*, a 58-inch ibex, and a 53-inch markhor have an individuality of their own: they are superb types of animal beauty, they are *possessions*—worthy to become heirlooms. It is not every one, even if he has money and a good head, who can gain possession of such trophies. Hunting in Asia does not offer opportunities to collectors of innumerable horns and skins, nor to the man who must let his rifle off every day. It offers hard hunting and really fine rewards to the man who is good enough, therefore I place it on a very high level. Yet Asia caters for nearly every type of hunter. A rapid review of the varieties of big game that the continent holds will show that this is true.

From the Mediterranean Sea to the Pacific, and from the Indian Ocean to the Arctic Coast, that is to say, taking in one broad sweep the whole of the Asiatic continent, there are, roughly, some ninety-five beasts which may be classed as quarry for the hunter, and I am not troubling about the very finely drawn differences between local varieties of one species. Of these there are some twenty-four species of deer, seventeen varieties of wild sheep, seven of ibex, four of markhor, and at least nine well-defined varieties of gazelle. Of purely Asiatic types are several races of takin and goral, innumerable varieties of serow, three varieties of tahr and a nilgai. There is a buffalo, a gaur, a yak, a moose, a reindeer, a chamois and a saiga, an antelope from Tibet, an Indian blackbuck, an elephant, and



THE ARID DESERTS OF ARABIA.



ALPINE SCENERY IN THE HIGHLANDS OF CENTRAL ASIA.

INTRODUCTION

even one variety of that African family, the oryx. Besides these horned game, are lion, three races of tiger, three of leopard and some six or seven varieties of bear.

A general review of the main hunting grounds will give a good idea of the distribution of the game and suffice as an introduction to the more detailed descriptions of the different areas that follow.

Geographically we have divided this volume on Asia into the following heads: Nearer Asia, including Asia Minor, Syria, Arabia and the Armenian Highlands. Persia and the Caucasus are another two divisions dealt with separately. India occupies a position naturally cut off from all the others, the Himalayas being its northern boundary. China is dealt with as a whole, but as a matter of fact its hunting grounds are chiefly confined to the western provinces. Under the title of Inner Asia we sweep all the lands between the Caspian and Mongolia—Russian Turkestan, Bokhara, the Pamirs, and that ambition of all hill-stalkers, the Tian Shan. Upper Asia takes in the Altai districts, the Gobi Desert, and North-Eastern Siberia, towards Kamchatka.

But these divisions must not convey to the mind that each is self-contained and constitutes a separate hunting ground. In many cases the areas overlap. Occasions might force the hunter to touch on one small corner of one division in order to get some particularly rare and "difficult" trophy; while, on the other hand, a trip could be planned on which the traveller might touch on several of these geographical areas and obtain many trophies of a vastly different nature.

Political and geographical boundaries, as well as climate and seasons, force the hunter to plan in accordance with them. By a review of the chief centres of sport and the main routes that lead to them the reader will get a very fair idea of how Asia is mapped out for the big game hunter. Broadly speaking, I should pick out the main mountain groups of Asia and class them by themselves as the resorts of the principal beasts of the chase. For instance, the Caucasus, the Himalayas, the Pamirs, the Tian Shan and the Altai are the chief big game haunts in Asia; there are also, of course, secondary ranges such as the Armenian Highlands, the Kopet Dag, the Khingan, and the Pe-ling on the eastern declivities of Tibet. All of these have a considerable variety of animal life, any one of them is worth shooting over, each constitutes a separate expedition, or, if preferable, several may be worked together. The big mountain groups are for the most part the refuges of big game nowadays, but the extensive

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plains of Asia also hold many species of animals peculiar to them in particular.

The most productive, the best known, and perhaps the most attractive hunting ground for Englishmen in Asia is, without doubt, India. The great contrasts of physical conditions and of climate cause it to contain an amazing variety of animal life, which includes many fine trophies, some dangerous, some rare and some very peculiar beasts. India is easy to get to, it has many attractions which appeal directly to the Britisher, travel throughout its length and breadth is comparatively luxurious and easily arranged. Its gigantic border ranges are a veritable paradise after the heat of the plains, and for generations they have given, and they still give, splendid sport to innumerable hunters. India practically constitutes a hunting ground to itself, with Burma as an appanage; they can be roughly divided into lowland and highland sections.

Next in order of merit, and yet, curiously enough, the most recent to be appreciated, are the hunting grounds of Inner Asia—the Pamirs and the Tian Shan. These are entirely for the hill-stalker, they support hill game of the finest quality and in quite phenomenal numbers. The biggest ibex, the heaviest wild sheep, the longest roe deer horns and the finest wapiti procurable to-day are to be obtained on the roof of the world and in the Celestial Mountains. These alone are worth the lengthy journey that is entailed. Every year the Tian Shan is becoming the more favourite goal for those who can afford the time. Railways are creeping eastwards across the wastes of Central Asia and bringing the most out-of-the-way places within easy reach. The construction of roads over the Kara Korum barrier is making it yet more feasible for the Englishman in India to reach that "Mecca" of his desires on a short leave. Of the Pamirs who can say? The big *Ovis poli* have now retired into remote and prohibited regions, and the hunter has to content himself with poor examples of this magnificent wild sheep, or wait.

The Persian ranges and the Caucasus form a jumble of hunting grounds which it is difficult to divide up. They are alike in many ways, and yet such different conditions prevail that they are dealt with subsequently under different headings. These regions are comparatively little known, in spite of their close proximity to Europe; the Caucasus can only claim to be half in Asia. There are hunting grounds in Asia Minor which are within a week's journey from London. Political intrigue and internal troubles have rendered these countries inhospitable to the traveller, yet



ARID TYPE OF IBEX-GROUND.



SIBERIAN "TAIGA."

PLATE III.

INTRODUCTION

they are likely some day to become the goal of hunters with a short time at their disposal. The Caucasus constitutes a very fine and productive shooting country. It is very near, and although the best grounds are in the hands of private owners, yet permission to visit them is generally easily obtained.

All over Asia Minor, Syria, and Armenia wild game is locally distributed, and it will be seen from further description that there are not only new heads to be got but a new country to try; and this is always an incentive to the true hunter, who is tired of following in the footsteps of his predecessors. Persia has a wonderful list of game animals for so destitute a country. It is distributed over a wide area, but the Elburz Mountains and the Kopet Dagh, in fact the northern borders of Persia, constitute the chief centre for sport. Two varieties of wild sheep, ibex and stag can be obtained here.

In direct contrast to ancient Persia is Western China, one of Asia's most remote and least-known hunting grounds. Where the Tibetan plateau falls off in rugged escarpments towards the plains of China, and in a few isolated ranges, such as the Pe-ling and Tsing-ling, there is hunting of a very special type to be experienced. A journey to these grounds necessitates a certain amount of forethought, but no hunter will be disappointed, for the stag, roe, bear, the strange takin, and serow are all peculiar varieties, indigenous to these regions.

The only other hunting ground in Asia which claims special consideration is the Altai Mountains, both Mongolian and Russian. These form the home of one of the most highly-prized trophies the hunter can wish for—namely, the *Ovis ammon*—and although it cannot be said that he is likely to get much else, yet the possession of a few good specimens of that superb beast are considered to be worth going for. The sheep country in the Altai districts are easy to get to and afford some very fine stalking; there are also gazelle, bear, ibex and stag, but these, except the gazelle, rarely fall to the rifle of the hunter who is especially after sheep.

Many miscellaneous regions in further Asia, haunted by beasts well worth specially organized expeditions, are to be recorded. For instance, there is a wild sheep of a peculiar variety which lives alone on isolated ranges in the far north of Siberia. This forms a journey by itself. There are reindeer and moose in the forests at the source of the Yenisei. Another type of wild sheep and many bears are to be found in Kamchatka. Manchuria is likely to become some day a prominent centre for hunters, for

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the long-haired tiger will always attract attention; wapiti and roe exist, and, not far from its southern borders, in the Khingan Mountains, lives yet another variety of wild sheep.

In the western portion, Arabia, Syria and Sinai must be recognized as possible hunting grounds. The latter is well known to hunters, but the opportunities offered for the hunters of ibex, gazelle and bear in Syria are not appreciated and have scarcely been recorded. Arabia—the Unknown—has not been entered by Europeans in search of sport. The tahr of the Muscat hinterland has never been hunted, and the oryx of the Arabian deserts has only recently fallen to a European rifle for the first time.

This foreword should give a general idea of the various zones in which the big game of Asia can be divided both zoologically and geographically. The reader, having grasped the main divisions, will be in a better position to apply the detailed information offered in the following chapters.

DOUGLAS CARRUTHERS.



THE GORGES THAT LEAD UP TO THE PAMIRS.



Photo by]

“THE ROOF OF THE WORLD.”

[Mr J. H. Miller.

PLATE IV.

THE NEAR EAST

UNDER this title I include all Western Asia exclusive of Persia and Russian Caucasasia, the region, in fact, composed of Turkey-in-Asia, independent Arabia and the Peninsula of Sinai. It is a varied country, for it can offer to the hunter a choice between the heavily forested ranges of the Black Sea littoral, the lovely mountain scenery of Anatolia and Armenia, the dead level plains of Mesopotamia, the deserts of Arabia and the rocky barrenness of Sinai.

All of these are almost at our very doors. It is a five-days' journey to Port Said on one side, it is three days to Constantinople on another, or the traveller can get on to the northern boundaries in four days via Russia. In spite of this, the region is scarcely known as regards the sport it supplies; indeed, the local conditions are so uncertain and attract so little attention, unless the traveller is on hunting bent, that in all the mass of literature on the various countries contained inside this area there is not much to be learnt of use to the would-be hunter in Nearer Asia.

Asia Minor, in spite of the progress of railways, has not advanced much into public view during recent years. In fact, it would be inconsistent to talk of advance at all, for the political condition of the country has, if anything, become worse. Brigands, however, no longer maraud on the outskirts of Smyrna—the most important town of Asia Minor—while in the interior any animosity that exists is, in nearly every case, directed against the Turk and not the European. The whole of this region, therefore, is attractive to the traveller. He may meet with all the enjoyment of good hunting companions and be entertained with the most open-handed hospitality wherever he goes. Asia Minor has, at the present moment, reached the stage of being sufficiently opened up to an advantage and not a disadvantage. The railways have crept into the interior, but are only used by natives and a few European merchants. They lead to nowhere; there is not much traffic. It is very seldom that they come in the way of the traveller. This state of affairs will not last, for immediately the Taurus Mountains have been crossed, and the Anatolian railways connect with the Mesopotamian and Syrian lines, there will be much through traffic and, no doubt, many passengers. Then, from the Persian Gulf or the Mediterranean, anyone with a mind to it will be able to go by rail through the heart of Asia Minor to Smyrna or Constantinople;

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conditions will be altered and the tourist may appear. For the present the hunter desirous of visiting any portion of Asia Minor is safe; it is still all unspoilt. The railways take him over the (to him) uninteresting belt and drop him either on the edge of his chosen ground or land him far in the interior, with an untouched world before him.

Taking Asia Minor to include the whole of Anatolia, Turkish Armenia and Kurdistan right up to the Persian and Russian frontiers—Turkey-in-Asia, in fact, exclusive of Syria, Palestine and Mesopotamia and Arabia—we have a region which is more or less of the same features, of the same conditions, and holding the same type of big game throughout its entire area. As a whole it is one geographical area, and it can thus be best described. Asia Minor should chiefly be regarded as the country of the hill-stalker, and indeed of the most scientific type of stalking. In the western districts continual hunting of the game animals by natives has placed the European stalker in a difficult position, for he has not only to compete with others over a small country, but to pit his skill against a beast which is very well educated. In other districts he has to contend with somewhat peculiar natural features, which make the stalking of the game more arduous than usual. For instance, the ibex of Asia Minor (*Capra hircus aegagrus*) are to be found in many localities which are partially forested, that is to say, there is not a large expanse of hill country above the forest zone, and the ibex inhabit the area of highland where trees grow sparsely. This may not seem of vital importance in the chase of such a beast, but as a matter of fact it is of great consequence. The problem before the ibex hunter in Asia Minor is for him to discover his game on ranges where no trees exist at a high altitude. Again, with regard to the hunting of the wild sheep, or mouflon (*Ovis orientalis gmelini*), the difficulties encountered are owing chiefly to the nature of the ground, also to the gradual curtailment of "wild" country by increasing domesticated flocks. The habitat of the sheep consists of rolling downs, without breaks, with smooth, even sky-lines; also always utilized by the native shepherds and their flocks. The result of this is a most phenomenal shyness and an extreme wariness on the part of the game.

In the eastern districts, in Kurdistan and Armenia, the hill-stalker will find full scope for his energies, for the mountains there rise to a considerable height. Here there is true ibex ground, unspoilt by such hindrances as trees, the sheep inhabit more rugged country than in the west, while chamois are to be found in their typical surroundings of precipice and crag.

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For the rest, the big red deer (*Cervus elephas maral*), the maral of Asia Minor, demands very attentive work in order to bring home a good head. Here lies a new field, for they have only been hunted by Europeans in a few localities; there is much new ground to try, especially in the far north-eastern corner. Wild boar are found nearly everywhere and attain a very large size in the big oak and chestnut forests of the Black Sea littoral. The fallow deer and the roe exist, but are rarities, while bear are found in every suitable locality.

There are several ways of entering Asia Minor. From the west Smyrna would in most cases be the point of entry, for it is situated in a position that allows the traveller a choice of routes. Should the hunter already have determined on a journey to the eastern districts he will probably go direct, via Constantinople, by rail to Angora, or to the head of the so-called Baghdad Railway at Ereğli. Thence he can set out eastwards by caravan. He might also land at Trebizond on the Black Sea and go south by road. He can also land at Mersina in the Levant and move northwards along the Taurus and Anti-Taurus, or go westwards into Anatolia. A precise knowledge of the actual hunting grounds, as well as his desires in the way of trophies, would decide his route.

From Smyrna, by using the two railways that branch from that delightful town into the still more delightful interior, the hunter may reach in easy time the abodes of red deer, ibex and mouflon. This route leads to the nearest haunts of the wild goat, for it is a fact that Mr E. N. Buxton reached the Maimun Dagħ in a week from London. This is an isolated sandstone range, close under which the railway leading through Aidin to Chivril passes, and although scarcely to be recommended, since there is so much better country further east, a description of its conditions are typical of the smaller, isolated ranges of Anatolia. There are many of these uplifts, rising suddenly to a few thousand feet above the surrounding country, and on nearly all of them wild game is to be found. In the case of the Maimun Dagħ, the excessive roughness of the formation, and the peculiar nature of the country renders it a most favourable refuge for the wild goats. Here they seem to have successfully survived much hard hunting for many generations. The natives drive them—a lazy, unsuccessful method, for they seldom succeed in doing more than killing females and young bucks. This has also resulted in making the old males more wary than usual. The Maimun Dagħ is the most accessible haunt of the ibex, being close to the station of Chardak, a day's journey from

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Smyrna, and although the game will long survive, it is scarcely attractive enough to the true hunter, for much untried ground lies to the south. In fact, the whole of the region between Adalia and Makri—a rugged peninsula jutting southwards into the Mediterranean—is full of isolated uplifts remarkable for their precipitous cliffs which protect the ibex and render them safe from harm. The wild goats seem to have been driven gradually to the most remote coastal ranges, where they are seldom hunted. Mr F. C. Selous has hunted in these districts, and although he obtained his big head in the Maimun Dagħ, yet he found many ibex on the Musa Dagħ and the coastal ranges south of Adalia.

Travel is exceedingly easy and cheap in these parts and the natives most hospitable. The chief thing to be avoided is the excessively hot weather, which lasts from May to October, when lack of water in the high country adds to the difficulties of long days on the hills. The presence of much forest destroys the chance of really scientific stalking, for even when game has been sighted, which is with increased difficulty on account of the foliage, the hunter has to deal with the additional puzzle of finding his quarry again when nearing the end of his stalk. However, there is much interest and very exciting hunting may be enjoyed in the ibex-rocks of Western Anatolia; for true hill-stalking in search of the big head, such as exist in numbers and run to as much as 55 inches, we shall have to go to the eastern highlands of Asiatic Turkey—the Alpine region on the Persian frontier.

Western Anatolia produces some fine heads, but they are rare and hard to come by. The horns are known to reach 50 inches and may run to 53 inches. A good average head should be somewhere between 40 and 46 inches in length. To many people the wild goat of Western Asia is one of the finest types of ibex to be procured, the curving, scimitar-like horns, with that peculiar knife-edged front, being considered far more graceful than the heavily “knobbed” frontal surface of other Asiatic races. Its reddish brown coat, black face and limb markings, and long, shaggy beard add to its fine appearance, and in comparison to its size its horns are much longer than those of any other ibex; its bulk is inconsiderable, for it stands only about 30 inches at the shoulder.

This wild goat has a very wide range. It is to be found from Daghestan in the Caucasus to as far south as Damascus; from the Greek islands to northern Persia; and it extends—in a varied form, characterized by smooth horn surface—as far east as Baluchistan and Sind.



A VALLEY IN THE LEBANON MOUNTAINS.



THE RUGGED RANGES OF SINAI.

PLATE V.

THE NEAR EAST

The big red deer, or maral (*Cervus elephas maral*), is the only other trophy worth hunting in Western Anatolia, for although the game-list includes roe deer, fallow deer and wild boar, the former are too rare to promise success and the latter is so common that the hunter may come across him any day. The maral, however, is a very worthy beast, and its haunts in so accessible a district as this must attract attention; usually only remote and difficult regions provide room for so splendid a beast. This long-faced stag is not very widely distributed in the region under discussion, although it ranges far into Persia and the Caucasus. Probably many fine hunting-grounds exist in the mountains forming the Black Sea coastal ranges, where, so far as I know, no one has hunted them. Further south it is only on the forested ridges, which rise to a sufficiently high altitude to ensure plenty of water and food, that the stags are still to be found. The chief of these are the Ak and the Murad Dagħ, remarkably small "grounds" situated close to the railway which now connects Smyrna with the far interior, to the north of the section between Ushak and Afium Karahissar, as well as in the Emir Dagħ to the east of the latter town.

These ranges rise to about 8,000 feet in altitude and are well clothed with forests of pine and juniper. In spite of the very small area they cover, good heads have been shot there; in fact the stags of this district, although few and far between, run equal to those of the huge preserves of the giant Caucasian ranges. The conditions of travel are the same as elsewhere in this hospitable country. Such close proximity to civilization grants to the hunter greater freedom from many of the usual worries that beset him in more out-of-the-way places. Mr Selous found it very hot and rather early for stag at the beginning of September; but Mr Buxton found them roaring on the 28th of that month, or, rather, their apology for a roar, which is described as being "like the exaggerated yawn of a big, lusty man."

The maral is really an eastern race of red deer, which has its true home in the Caucasus and Northern Persia. From here it extends into the Crimea and Asia Minor. Apparently it keeps its size even to the limits of its range, for the three record heads have been obtained respectively in Western Asia Minor, the Caucasus and in the Crimea. It is a beast about whose range, so far as Asia Minor goes, little is known. There must be large grounds to the north of Yuzgat, Sivas and Erzingan, for wooded mountains and well-watered localities abound, and stag are known to be there. This is a good

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opportunity for anyone who prefers to try new localities and to take his chance of a successful bag instead of going over old ground.

The littoral of Asia Minor is, on nearly all sides, composed of highlands, —sometimes only rolling hill country, but at others rising to snow-capped mountain ranges. Beyond this surrounding barrier the interior is for the most part a high and more or less barren plateau. The mountains themselves are less well clothed with trees on their inland slopes, the country becomes pasture-land in place of cultivated. This comparatively arid region has its own peculiar fauna, amongst which is an exceedingly beautiful little wild sheep (or mouflon), Gmelin's, or the red race of the small sheep of Western Asia. Travelling from the west by rail from Smyrna or Scutari, as the traveller is sure to do, unless he comes up from Mersina or Adana and crosses the Taurus Mountains, he will come into the westernmost haunts of the mouflon in the neighbourhood of Konia. To the north and east is the plateau basin of inner Anatolia, a wide, gently rolling plain, broken here and there by smaller isolated ridges, or rising occasionally into rounded "downs." A featureless region, described on maps as a salt desert, and although in summer its dusty surface is very nearly desert, yet this gives a wrong impression, for the whole of it is fine grazing land and the abode of innumerable shepherds and their flocks. The plain of Axylon, as the western portion is named, descends at an easy incline to the salt lake of Tuz Kul, which is the lowest portion of the basin. Roughly, the plateau may be said to average 3,300 feet in altitude, with hills rising to 800 and 1,000 feet above it. Surrounding it on the south and east is the Cilician Taurus and the Anti-Taurus. In the north-east is a conspicuous landmark, the volcano of Erjias or Argæus, which rises to close on 13,000 feet above the sea and is to be seen over an immense area. Northwards the plateau merges imperceptibly into the hill country of Angora.

There is a large area of country here which one would consider suitable for wild sheep, yet their range is very circumscribed. In 1913, in company with Mr G. Fenwick-Owen, I traversed the north-eastern portion of the plateau between the Anti Taurus, Kaizariyeh and Angora. We never found traces of mouflon, nor could even find natives who knew of them by name. The two points at which previous hunters have started out to find them are Konia and Eregli, stations on the railway which will eventually connect Anatolia with Mesopotamia and the Persian Gulf. Konia was once the centre of a large area of country inhabited by mouflon, for

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they ranged from the north-eastern slopes of Sultan Dagħ, south of Ak-shehr, to Boz Dagħ and other small ridges on the plains of Axylon. In these days the mouflon are almost driven out of the western portion of this area, and it can only be regarded that the mouflon are worth pursuing in the region to the east of the railway.

From the Boz Dagħ they range over all the country to the south and east. In the little hills within sight of the railway between Karaman and Eregli Mr J. H. Miller has seen them in numbers; while in the foothills of the main Taurus, to the south of the railway, in the same locality, several travellers have successfully hunted them, and good heads have been obtained. It will be noticed that these mouflon confine themselves, for the most part, to the rolling foothills and the outlying spurs of the Cilician Taurus. They inhabit quite isolated ridges, lying far out in the plains, as well as the flanks of the main Taurus. In these localities a wide expanse of featureless country forms their retreat and saves them from extinction, instead of rugged ranges of high altitude. The mouflon apparently never go very high, even on the spurs of the Taurus. Their haunts here, however, are of a very different character to those on the plains, for the country is rough and broken; the valleys, though small, are deep-cut and sudden, and grant quite new and much easier methods of stalking. They do not shift their ground, for hunters have obtained them from the same camping grounds both in spring and autumn. Yet I imagine that the presence of mouflon on that spur of the Taurus, called Ibriz Dagħ, is directly influenced by the high 7,000 foot plateau which spreads itself to the southwards and forms a tableland which the sheep can use, if necessary, as a safe retreat. It does not do to visit this locality too early in the year, neither is any advantage gained by doing so, mid April or early May being the best season. The northern range of the mouflon on the central plateau of Asia Minor is probably somewhere about Akserai, to the east of Tuz Kul.

The chief difficulty that the hunter has to contend with is the featureless nature of the country, the hard, unbroken skylines, and the presence of native shepherds, which keeps the wild game for ever on the look-out. Difficult stalking and long shots are the general rule. Apparently there is not much difficulty in finding the sheep, they do not move about, and are found in the same locality, both during summer and winter. The open nature of the country they inhabit allows their feeding grounds to be blown clear of snow when the more shut-in and broken country is snow-bound. Both the winter months, on account of the exceptional cold, and the

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great heat of late summer ought to be avoided, the most agreeable season for hunting being in the spring and autumn. On the whole the spring is probably the best season on account of the abundance of pasture, for this fact allows the domesticated flocks and their shepherds more room and therefore the wild sheep are less disturbed.

In size and build the Asia Minor mouflon, or red sheep, is very like the urial or shapo of Persia and Northern India, the horns averaging almost the same length. The biggest known head, according to Rowland Ward's records, is as much as $40\frac{1}{4}$ inches, but an average head of these days would be 28 to 30 inches. From the district to the east of Konia Mr E. N. Buxton obtained a head of $29\frac{3}{4}$ inches, and Mr R. Page one of $28\frac{1}{2}$ inches, while from the foothills of the Taurus, between Karaman and Eregli, a head of $30\frac{1}{2}$ inches has been shot. It should be mentioned that these sheep differ from the urials in that the females have no horns at all.

The mouflon turns up again on the eastern side of the Anti Taurus in the same form, ranging, in isolated habitats, as far north as Erzerum and as far south as the Karaja Dagħ between Urfa and Mardin. This region is very little known to hunters and is probably well worth a visit. A line taken from Trezibond, on the Black Sea, to Aleppo or Adana might give the most interesting results. The high ranges to the south of Erzingan should be hunted. The Bimbogħa Dagħ and the Beirut Dagħ, west and south-west of Albistan, is a good ibex ground, where the hunter will not be much troubled by trees. There is also a dry range to the south of Malatia, which is spoken of as full of ibex and seldom disturbed by the shepherds, who, for the most part, ruin the chances of the hunter in the high country during the only months he can get there. This journey should be undertaken in summer, for a great deal of the best country is impracticable before June. Moreover, the roads are likely to be impassable for weeks during the spring. Probably the quickest approach is by way of Aleppo, which can be reached in nine days from London, from which place carriage and pack horse, at a remarkably small cost of hire, will carry the traveller northwards to Aintab, Marash, Albistan and Malatia. From the latter town one can drive all the way to Trebizond.

Mouflon are said to exist in this area, but I cannot find definite information as to the exact localities, except in the Hakkiari district, to the south of Lake Van. Ibex are on every summit that attains sufficient height or is uninhabited. In the big mountains, such as the Beirut Dagħ, they inhabit the rock and shale area far above timber line—the type of country



A HUNTING PARTY IN THE SYRIAN DESERT.



IN THE TAURUS MOUNTAINS—Typical abode of the Persian Wild Goat.

PLATE VI.

THE NEAR EAST

we would call typical ibex ground—but in the smaller, lower, and consequently more barren, ranges, they depend on the wildness of the country owing to lack of inhabitants and, in some cases, to the ruggedness of the formation for their safety. In the case of the ibex, at any rate, it is not a criterion that the higher their habitat the larger their growth of horn. The little ranges of Western Anatolia have produced heads of 46 inches in length, but these are probably very few and far between. Good average heads are sure to be more numerous in the high country further east. It is uncertain whether the comparatively dry and barren ranges overlooking the Mesopotamian steppes contain as good heads as the Alpine region of Kurdistan, but it is quite possible that they do.

A hunting trip into Far Eastern Asia Minor is much more of an undertaking than any short journey in Anatolia would be. The region which stretches along the Persian and Russian frontiers, under the rather broadly descriptive titles of Armenia and Kurdistan, is much more difficult to approach and at times quite impracticable to travel in. The miniature ranges of Anatolia are here replaced by an Alpine mass of snow-capped chains, where beetling crags and deep-cut valleys are the home of wild tribes of mountaineers, and forms an ample hunting ground for anyone ready for rough work in order to procure a few fine trophies.

Lake Van, which might be taken as the centre of that confused mass of mountains which fills up nearly the whole stretch of country between the Black Sea and the Persian Gulf along the Russian and Persian frontiers, is a good point for the hunter to make for in order to explore the surrounding shooting grounds. Van can be reached by road from Trebizond on the Black Sea during the summer months, but the spring time would have to be avoided, for the track, at its best, is only an apology of a road, and snow lies late on the ranges which have to be crossed. The valleys are blocked with snow from the end of September until late March. Erzerum is known as the "Siberia of Turkey," with a mean winter temperature of 13 degrees Fahrenheit. The Trans-Caucasian railways bring the traveller to Erivan and Julfa, and from either of these places routes lead to Van. From Erivan is the best, for there is no trouble arising from a needless crossing of the Persian frontier. There is, however, another but longer route which avoids the highlands and the difficulties of Russian and Persian frontier regulations, such as the importation of arms and ammunition. This is to enter the Turkish Empire at Beirut in Syria, where it is an easy matter to arrange for the landing of a rifle and cartridges. From this town a

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railway journey of seventeen hours will take one to Aleppo or on to the Euphrates, whence one can drive to Diarbekr or Mosul, which is on the opposite side to Van, of the Kurdistan and Hakkiari hunting grounds. Thus the traveller can get close to his goal earlier in the year than by the northern approach, and he can also avoid the trouble generally experienced when travelling with arms through Russia. A week should be allowed for getting from Erivan to the town of Van, where outfit and caravan can be got together for further advance. Van is a good centre, for to the south of it lies one of the biggest mountain masses, a world of rugged highlands, characterized by rich pastures and intersected occasionally by rich alluvial plains where the towns are situated. South of Lake Van and between it and Lake Urmi is all good sporting country. It is "big" country and difficult, but the type of hunting is good and the trophies well worth taking trouble to procure.

This mountain group may be considered the nucleus of the range of *Capra hircus aegagrus*; it being naturally about the centre of the area they extend over. It is also the biggest ground, and includes the highest and most well-protected fastnesses that they have. In days to come it will remain as the last resort of the wild goat, when all other smaller and lower localities have been swept clear of game. The difference between the physical features of this Alpine region and those of the rest of Asiatic Turkey is demonstrated to zoologists by the fact that the chamois is found here. The chamois is intolerant of heat and is confined to such mountain groups as the Pyrenees, the Alps and the Caucasus, this being the only locality where it is found in Asia. Perpetual snow, or, at any rate, rocky fastnesses and Alpine meadows, are necessary for the chamois, and these are a feature of the jumble of mountains that rise to the south and south-east of Lake Van. Also, strangely enough, the mouflon find suitable haunts amongst these high mountain masses, living in a very different type of country to what they do further west.

When once Van is reached, the mountains are not so difficult to get into, for the traveller is already at an altitude of over 5,000 feet, and the snow must have melted off to a considerable extent to have allowed him to get there. Yet the ruggedness of the ranges and the scarcity of tracks force the traveller to choose the best season if he wishes to go far away from the main routes. Many valleys are so cut off from each other that the approaches from one to the other are only feasible for a few months in the summer. The ordinary difficulties of travel in wild mountain districts

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assail one, as well as an uncertainty caused by the extremely quarrelsome character of the inhabitants. Mr Isidor Morse, who has visited this country twice, is of opinion that the winter offers the best chances to find game, it being then driven down and there being a comparatively small area to hunt. There are, however, some difficulties to be faced. Mr Morse tried in October, November and December, coming in from the north, and consequently had very difficult passes to tackle. Late winter or early spring should be tried, and an approach should be made from the south, for there is no very large extent of mountainous country between the game resorts and the Mesopotamian plains.

The late Captain Bertram Dickson, who was British Consul at Van for some time, made many excursions in search of big game in the neighbourhood; in fact, what information I have gathered of these regions comes largely from this source. Being a keen hunter, Captain Dickson tried much new ground, and the extent of his wanderings covered the whole region between Bitlis, on the west of Lake Van, to the Zab River, left effluent of the Tigris. This area includes the big mountain masses of Sat Dagħ (14,000 feet), Arnost Dagħ (10,800 feet), Harakol Dagħ (10,200 feet), Ardost Dagħ (10,300 feet). Thus it supplies a huge hunting ground, which is only able to be traversed during four months of the year. As a matter of fact, a small portion of this area would supply enough ground for a whole season's hunting. The best sporting districts within reach of Van are the Chukh Dagħ and Karahissar Dagħ, two days to the east of that town, thence southwards to the big mass of mountains which culminate in Kokobuland and Sat Dagħ. The region is one continuous mountain mass, emphasized here and there with higher outcrops. The game is distributed evenly over the whole area, and never numerous in any one particular place. Captain Dickson said in one of his letters that he had made journeys of ten days without seeing game and had to come home without firing a shot; on the other hand, on one trip he found five ibex on one ridge, shot one in the evening, and the next day got three more. Although they are never plentiful in any one place, there are plenty of places where one always finds a few.

“If you come out here expressly to shoot a lot of ibex I think you would be disappointed. But by going from place to place, stopping a day or two at each likely mountain, you will have a very interesting time and ought to get an ibex every third day, and perhaps, now and then, get two or three bunched in a corner and kill them all.”

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On every high ridge

“There are a few ibex to be found—i.e. if you can spy them. They are never in herds, like the Tian Shan ibex (except, of course, the females), and the most I have ever seen together was five. But they are most difficult game to hunt as they hide in holes in inaccessible precipices all day and only come out in the evening. To hunt them you have to climb up to the top of the mountain at night and look out for them at dawn when they come back to lay up for the day. You may get a shot at them, or mark the place where they have lain up and then stalk them; the rest of the day you may spend in searching likely places on the chance (very remote) of coming across one. What usually happens is that while you are laboriously climbing about the crags, they hear or smell you coming and clear off to the next mountain, some miles off, before you can get near them. The mountains are very high, 8,000 to 12,000 feet, and very rugged and precipitous. You must be a strong and fearless climber, as the male ibex only frequent the highest and most inaccessible places. Personally I love the stalking and the climbing, and exploring the mountains and the scenery, so that if I make a journey of four days to a place, spend four days hunting, then four days back, I should consider it successful if I got one or two ibex.”*

These are the first-hand opinions of a keen hunter, and they give a very good idea of what ibex hunting is in these romantic highlands of Kurdistan.

Besides the rough hill-climbing, which such stalking entails, there is the easier and almost luxurious hunting of the mouflon, for one can often ride over the grassy downlands which they generally frequent, and, on finding them, dismount for the stalk. They are much more numerous and easier to stalk than the ibex, and as they do not hide during the daytime they can be hunted without so much waste of time. The sheep of the region between Lake Urmi and Van may be of two varieties, namely, the Persian (*Ovis orientalis erskinii*) and the Armenian (*Ovis orientalis gmelini*), for this area forms the junction of their respective ranges. No heads having been brought home we are in the dark as to these details. They are not always easy to find. One traveller records them on a certain range and the next visitor is disappointed at finding nothing there. It is certain that they change their quarters and migrate at fixed seasons, one of the most important influences in forcing their movements being the

* From letters written to Mr P. B. Van der Byl, who kindly allows me to quote from them.



IBEX-GROUND IN THE MOUNTAINS OF MOAB.

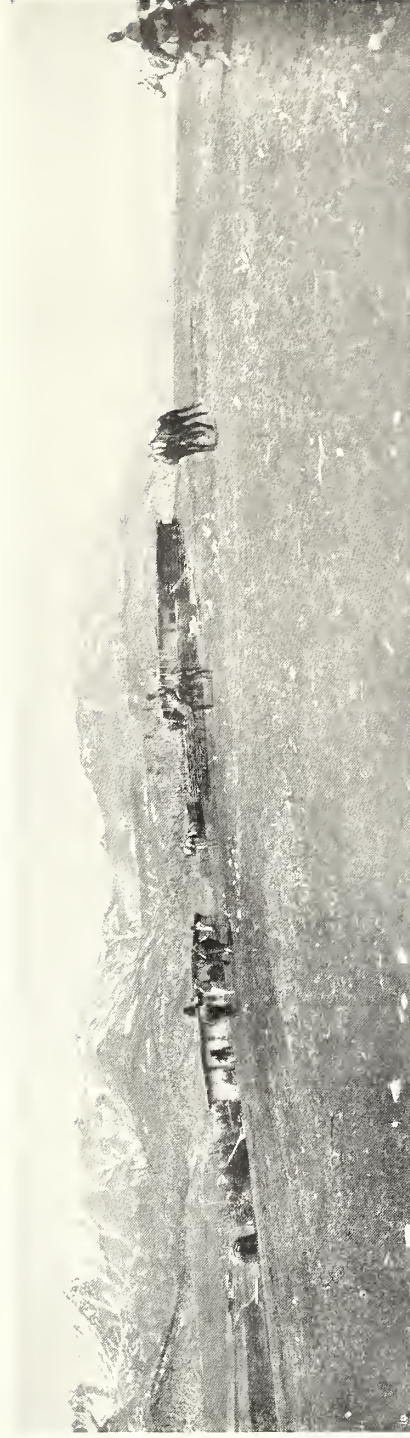


Photo by]

IBEX-GROUND IN THE ANTI-TAURUS MOUNTAINS.

[Mr G. Fenwick-Owen.

PLATE VII.

THE NEAR EAST

annual migrations of the Kurd shepherds, for they come in thousands, with their flocks and herds in tens of thousands, eating up the whole country as they go by, and disturbing all the game. The ibex are moved in the same way off the lower ranges, but doubtless remain on the high summits, anything above, say, 10,000 feet, which are big enough to give them space, but not good enough country to attract nomads and their flocks.

In spite of a very large amount of what looks like excellent game country, the game that does exist seems to be local and always shifting its quarters. Captain Dickson spoke of finding many wild sheep in the ranges to the south-east of Van; other hunters have failed to find any game there at all. Moreover, they do not confine themselves to low and featureless hill-country as they do in Anatolia, but are to be found on high rugged country which they inhabit in company with ibex. This alone shows how game will alter their habits and adapt themselves to their surroundings. Mr Isidor Morse tells me that he actually killed ibex and sheep on the same ground in the Ardost Dagħ, at the south-east corner of Lake Van.

This same traveller, who is the first to have explored these regions with any thoroughness, and has covered a wide extent of country in these mountains, is also the only authority we have for information concerning the chamois. So far the sum total of our knowledge of this variety (which has been named *Rupicapra, r. asiatica*) comes from a few specimens said to have originated from the neighbourhood of Trebizond. Mr Isidor Morse has traced the chamois as far south as the Arnost Dagħ, some way to the south of Lake Van. He tells me he actually saw a freshly killed head at the village Shattakh, but although he hunted up the valleys to the north-west, where they were said to be, he never saw them. They are probably local and rare, as well as being most difficult to find in such a huge country, where even the best guides and hunters are not to be depended upon.

One other type of scenery which the traveller will especially enjoy is granted by the presence of large forests on the southern slopes of some ranges, these are composed of cypress, juniper and dwarf oak, and, lower down, oak and beech. On the upper Zab River there are considerable areas of forest, which are the haunt of innumerable wild pig and a fair number of bears.

Leaving the highlands and dropping to the Mesopotamian plains we enter a country remarkably poor in animal life, yet it is of interest, for several Asiatic forms have here the most western limit of their range. Gazelle,

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wild ass and lion are the only big game and none of these are often seen or procured. Gazelle may be met with as far west as the Cilician plains and extend over Mesopotamia to Arabia, all, I imagine, being of the Dorcas type, until the heart of the Arabian peninsula is reached. Wild ass, the same as the Persian type, namely, *Equus hemionus hemippus*, range over the plain between the Tigris and the Euphrates, but do not, as generally stated, extend into the Syrian Desert. The only locality which I know of as being a sure place to come in contact with these very elusive beasts is the Jebel Sinjar, between Deir on the Euphrates and Mosul on the Tigris. From the small villages in this desert range a keen hunter could get in contact with the Arabs, who range the steppes to the southward and who are sure at certain seasons—probably at the end of the dry, hot summer—to know of springs where they come to drink, or pastures which they are forced to use in those months which are most trying to desert beasts. In the same way only a very keen hunter would be likely to try for lion under such unfavourable circumstances as surround its haunt in the Mesopotamian jungles. Should a specimen of the Asiatic lion be desired, probably a systematic search in the forested ranges of the Persian frontier, such as the Zagros and Shiraz districts, would be more likely to prove successful.

The rest of Western Asia is occupied by the more arid regions of Syria, Palestine and the Sinaitic and Arabian peninsulas, all of which are more or less closely related. Arabia can, for the present, be left to itself, for its sporting possibilities are very unreliable on account of the hostile character of its inhabitants, and most of it is a "forbidden land."

Syria, Palestine and Sinai are, on the other hand, very easy of access and pleasant to travel in. They contain an almost phenomenal variation of climate and scenery—tropical jungles and snow-clad mountains, forests and deserts existing in close proximity, while the possibility of getting an interesting, though small, variety of trophies is a good enough incentive to put more sportsmen in the way of trying this little-known region.

By entering at the ports of Haifa or Beirut and going to Damascus by railway, the hunter will reach a centre from which journeys can be made with the greatest ease to the haunts of two varieties of ibex, as well as the Syrian bear, the roe, the fallow deer, the Dorcas gazelle and—a trifle further afield—the Arabian oryx. I recommend Damascus as a starting-place, for there is much good shooting to be obtained close by; it is an

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excellent place to outfit and has an agreeable climate at all seasons, for it is always dry. Damascus is the true capital of Syria and Palestine; it is the terminus of several railways. One can travel northwards to the Euphrates or southwards across the Arabian frontier into the holy provinces of the Hedjaz; one can also reach the coast at two points. The Haifa railway brings the Jordan Valley into close proximity, and the Beirut line allows the traveller to drop off at any point he chooses in the mountains of the Anti Lebanon. Thus it will be seen that the railways will carry the traveller to within an easy distance of his hunting ground, long, tedious treks with pack horses and camels being unnecessary.

The winter climate of these regions is as near perfection as possible. For Sinai, the Dead Sea region, and the Palmyra ibex ranges, winter is the only season when hunting would be enjoyable instead of being labour. Summer, on the other hand, is the time to get at the bear, and it is the most favourable, although not the most pleasant, season for gazelle hunting. The summer months are excessively hot in the Sinaitic ranges and quite unbearable in the depths of the Dead Sea depression. It would be folly at that season to try to penetrate into the Arabian Desert in search of the oryx antelope, not only on account of the high temperature, but because of the scarcity of pasture and water.

Ibex may be said to be the characteristic game of all the desert ranges over the whole of this south-western corner of Asia. They are found from the Euphrates to Sinai, and all over the Arabian Peninsula. Their preference for the barren desert ranges seems unaccountable, but there is a good reason for it. The high mountains, such as the Lebanon, Anti Lebanon and the heights of Ajlun, are fertile enough to support a large population, hence the absence of wild game, the ibex being driven eastwards on to the desert frontier where they are undisturbed. Damascus may be said to be the dividing line between the range of the Asia Minor or Persian wild goat (*C. hircus aegagrus*) and that of the Sinaitic ibex (*C. nubiana sinaitica*). To be exact, the former comes as far south as about a day's ride north-east of Damascus, and the latter range northwards as far as the upper end of the Dead Sea, there being a gap of about 130 miles in between them.

The Persian wild goat, the hunting of which in Asia Minor and Kurdistan has already been described, here has very different haunts. In place of high ranges with well-pastured and forested flanks, they live on low hills which do not rise 500 feet above the desert, which only grow poor,

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scanty herbage and are without water. For the most part the ranges are long, narrow ridges, sometimes with jagged, rocky outcrops on the summits, and at other times so smooth and even that one can ride over them.

The lack of water has no effect on the game, for they appear to be quite independent of it, although I have seen herds of females with young coming to drink in midsummer at a small spring of water. I think the males are quite independent, and move away in summer to ranges where there is no water at all, leaving the females on the ranges where small springs exist. There is not sufficient water for the hard-pressed Arabs of this district, much less for the wild animals.

The centre of the Syrian ibex ground is Palmyra, or Tadmor, which can be reached in four or five days on horseback from Damascus, or in two days by carriage from Homs. Northwards and southwards stretch the long, low, serrated ridges where the ibex are found. Those to the south are inhabited by many ibex—this to my own knowledge—but having been there twice—in early spring and during the heat of summer—I cannot recommend them. The country is small, it is occasionally disturbed by Arab hunters from the desert villages of Karietein and Palmyra, and bucks are very scarce. But to show what these exceptionally arid mountains can produce I will say that in one day I have seen my hunters kill, with their antique guns, two ibex and two wild boar in one drive. On another occasion we got five ibex. The natives always resort to driving, for the narrow hills are very favourable to such methods, the Arabs only desiring to kill females for food and hides. Their implicit trust in the success of their method is, however, most difficult for the European hunter to deal with, especially as it is necessary to take a certain number of local natives along as guides.

There is a perennial spring about thirty miles south-west of Palmyra where one can camp at any season and hunt the surrounding country. In 1905, my companion, Mr J. H. Miller, procured an old gnarled head in this locality which measured $27\frac{1}{2}$ inches in length and $9\frac{1}{2}$ inches in circumference at the base. It was a small, but very thick, and perfectly formed pair of horns, which gave one the impression that they belonged to a miniature type of ibex. The beast itself was smaller in proportion to the northern race and very light coloured.

I should suggest that the ranges to the north of Palmyra might be well worth a visit. There are ibex in the hills within view of the oasis, and



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THE SINAITIC IBEX
(*Capra sinaitica*).



THE PALESTINE GAZELLE
(*Gazella merrilli*).

THE SYRIAN GAZELLE
(*Gazella dorcas*).

PLATE VIII.

THE NEAR EAST

I have seen freshly killed bucks with moderate horns brought into the village. They inhabit every little hill, and apparently they are distributed at intervals over the whole stretch of desert between Palmyra and the Euphrates.

The chief difficulty is the arrangement for guides, and the stipulation that they do not hunt. They will not go in small numbers, for the desert is always uncertain, and unfriendly Arabs may be met with. They also dislike being parted from their arms. The employment of an influential and tactful dragoman is the only way of coming to an agreement on such occasions.

I have records of ibex horns from this locality, obviously "picked up" heads brought in by natives, which measure $43\frac{1}{2}$ inches and $42\frac{1}{2}$ inches, and Rowland Ward notes a head from Damascus which was $45\frac{1}{4}$ inches. I do not think such heads are to be procured now, at any rate not south of Palmyra, but it would be folly to conjecture what might not be procurable in the untried ranges to the north.

To reach the home of the Sinaitic ibex one must take train on the Hedjaz railway and drop off at Ziza or Ma'an or some such wayside station to the east of the Dead Sea. Should the hunter have landed at Jaffa and found his way to Jerusalem, his caravan will take a trifle longer in crossing the deep-cut trough of the Jordan Valley and in bringing him into the rugged declivities of the plateau of Moab, where the ibex find a very safe and rarely-disturbed retreat. It is difficult to give an adequate description of the very peculiar environment that the ibex here frequent. The eastern side of the Dead Sea is composed of precipitous cliffs, with deep-cut valleys breaking through them. For some distance the cliffs rise straight out of the water, and there is no approach to the plateau above. In other places the country is so steep that one cannot climb down from the plateau to the shore below. Although the highest part of these hills of Moab is only 3,400 feet above the level of the ocean, there is another 1,300 feet of rugged, broken hill-country to add to this, for the actual floor of the depression is sunk this amount below the level of the Mediterranean. This escarpment of 4,700 feet contains some of the most extraordinary rock formations in the world and is remarkable for many reasons. Through it the streams which come from the plateau of Moab have cut deep trenches, which are a favourite retreat for the ibex in localities where there are no natives. But in other districts the ibex has left the higher and more rugged country to the Arab shepherds and retreated down to

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the most barren hills in the lowest part of the Dead Sea depression. This is a significant fact and it will guide any hunter that chances to visit the district.

There is a very extensive area to hunt over, and the actual hunting is of the most fatiguing nature, owing to the extraordinary roughness of the country. Much time will be saved by leaving this very rugged zone and carefully hunting the low foothills at the base of the escarpment. These are more or less easy going, and a large extent of country can be traversed in a day. The colour of the country is to be noted, for these low desert foothills are almost white in comparison to the red and black sandstone ramparts of the escarpment above, which the protective coloration of the ibex more closely resembles.

The best locality in which to succeed in hunting these ibex is on the east side of the Ghor-el-Araba, at the south end of the Dead Sea. By camping at the mouth of the valleys where they enter the plain, one can hunt along the foothills or go up into the crags above. Thus one can move along southwards as far as one likes without being assailed by the great difficulties of transport which one has to deal with when actually *in* the declivities. I have seen ibex as far north as the Wadi Zerka Main, while Wadi el Kerak is a good locality to hunt in. They are also found in small numbers on the west side of the Dead Sea, Mr P. B. Van der Byl actually shooting a 30-inch head near Ain Gedi, within twenty-five miles of Jerusalem. Southwards they range without a break to the Gulf of Akaba, and thence extend into the Peninsula of Sinai. The same ibex is found over the whole of the Arabian Peninsula, those from the farthest south, namely, from Yemen and the Hadramaut, being classed as a variety.

As a hunting ground, the declivities of Moab and Edom are very little known, the majority of hunters who have shot the Sinaitic ibex having obtained them in the Peninsula of Sinai itself. There the actual "grounds" are, no doubt, more extensive, but whether the hunting is more easy on that account is very doubtful. The easiest conditions under which to find these ibex are when they inhabit secluded desert ranges where they are not harassed by native hunters. Some sort of protection is needed, and in these days it is either the very rugged country, such as Sinai, or very featureless and apparently inadequate hills situated in uninhabited localities. In Sinai one has a typical and a very extensive "refuge for the wild goat." It is, in fact, the largest ground on which the hunter



BEAR-HUNTING IN THE ANTI-LEBANON MOUNTAINS.



THE HAUNT OF THE DEAD SEA IBEX.

PLATE IX.

THE NEAR EAST

can follow the ibex, for although, no doubt, there are some wonderful places in the hill countries of Southern Arabia, these are not open to travellers.

The granite ramparts of Sinai are easily reached from Suez, by way of the little port of Tor (or Tur), which is situated close under the culminating peaks, and only separated from the foot of the mountain by a coastal plain of fifteen miles in width. By following up one of the main wadis one can reach the heart of the mountains. Camels being the only means of transport, only the larger valleys can be used for the main caravan; but short lateral journeys from the big valleys will enable an energetic hunter to explore all likely ground. In the valleys are water, fuel and fodder. In spring they are a feast of colour and choked with luxuriant growth, thus making ideal camping grounds. The spring is the most enjoyable time to visit the peninsula, but owing to the height of the ranges one can hunt there in summer without much discomfort. In winter and early spring the climate is perfect, with a hot, dry atmosphere during the day and fresh, cold nights; there may be even frosts.

The main portion of the peninsula is a table land, which is reached by following up the steeply inclined valleys. Mr E. N. Buxton, the first Englishman to successfully hunt the ibex in the peninsula, camped for a month at an average altitude of 5,000 feet—entirely different conditions to my experiences of the ibex hills of Ghor-el-Araba, where one camps far below the level of the sea.

The difficulty of detecting the ibex, the restless habits of the beasts themselves, the very broken country they live in, as well as shifting winds, are the main drawbacks with which the hunter has to cope. On stormy days Mr Buxton found it better to stay in camp, for successful stalking was an impossibility. Another peculiarity of ibex stalking in these comparatively hot regions is the allowance one must make for their desire to keep cool. In the early morning they may be low down, perhaps right down in the gorges, but they very soon move up higher, either lying up in the shade of the rocks, where they are practically hidden, or actually hiding in caves and deep clefts, where they are absolutely invisible from every quarter. There is, however, a certainty of finding ibex in some numbers, hard work and very careful spying being the most reliable guarantee for success.

As regards size of horn the little Sinaitic ibex has a very proud show in proportion to its size; although quite the smallest in bulk, its horns

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may run to 50 inches. An average head for Sinai is about 35 inches. Those from Southern Arabia, distinguished as a variety (*C. nubiana mengesi*), run larger, 45 inches being a good average length for a pair of horns.

To return to Damascus and the sport obtainable in the neighbourhood. Gazelle shooting may afford some interest and result in success if a thorough understanding of the local conditions is grasped. Gazelle of the Dorcas variety range over the whole eastern borderlands of Syria and Palestine. They claim the deserts and partially cultivated plains as their true habitat, but are prone to undertake certain migrations at set seasons. Thus, when the inner deserts dry up, the gazelle move westwards and find themselves concentrating on to the settled lands; they come in contact with cultivation and even move up into the barren mountains in search of pasture. The hot season is, therefore, the time to look out for gazelle in close proximity to the cultivated areas, for the rest of the year they can wander where they will and are quite capable of looking after themselves. To the east of Damascus, in a short day's ride, one reaches the limit of cultivation. Gently rolling, undulating desert spreads eastwards into infinity, and here at the height of summer a remarkable form of gazelle hunting may be enjoyed. Acquaintance with the native landowners will procure as many men as are necessary for driving large extents of country, while the hunters remain partially hidden by little mounds of stones placed at distances on the higher ground. The gazelle prefer the rolling country to the flat plain when disturbed; they are also very slow about moving over a sky-line. Generations of gazelle driving have taught the natives where to place their "butts," and when the gazelle are really "in" from the desert it is no great labour for mounted men to move them towards the position of the gunners. This method is, of course, practised all over Asia, wherever gazelle abound, but the fringe of the desert bordering on the oasis of Damascus is peculiarly attractive to the gazelle when food is scarce in the desert, while the rolling hill-country adds to the chances of manipulating a successful drive.

Such is the skill of the natives in driving them that they habitually use large V-shaped enclosures made of stones into which to jostle the gazelle. This needs many men, and is only worth trying when the gazelle are really numerous, as they sometimes are when on migration. At the end of the V there are gaps in the wall, each of which opens on to a pit into which the gazelle fall.

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Most sporting of all is the Bedawin practice of riding the gazelle down and shooting them from the saddle or after dismounting. I have hunted thus with an Arab chief in the undulating desert east of the land of Moab. Only the fear which the gazelle have on reaching a sky-line allows the rider a chance. They slow down to such an extent on ascending a rise, and they pass the ridge so carefully, that the hunter gains ground and has the opportunity to dismount and take his shot.

All success with gazelle on the plains depends upon the season, as well as upon close acquaintance with the localities and inhabitants. Stalking of a quieter but very exciting kind may be enjoyed in summer in the mountains, for during the heat the gazelle move up into the barren Anti Lebanon to a height of 7,000 feet. These are really animals from the plains below and are not true mountain gazelle. In order to find the rare variety called *G. merrilli* one must search the hills of Moab and Judæa, on either side of the Dead Sea. This gazelle keeps entirely to the hills and is never found in the desert. Occasionally I have seen it in very rough country. It is allied to the mountain or Atlas gazelle of North Africa. Its horns are nearly straight as seen from the front, with no lyration; the tips curve slightly *forward*, not inwards, as in *G. dorcas*.

In the same country of the Anti Lebanon, frequented by gazelle in summer, there are a few bears to be found. On Mount Hermon, the highest crest of the Anti Lebanon, and occasionally on the eastern spurs of the main Lebanon, the variety of brown bear known as *Ursus syriacus* still exists in small numbers. Their education, owing to close contact with the inhabitants, is such that they are exceedingly difficult to bring to bay. I have seldom seen any wild animal so well able to look after itself. Their habitat is very small and very conscribed. In winter they are at peace and hibernate, or not, according to the season and locality, but in summer they live a precarious existence, always harassed by shepherds and stray hunters. Only the rugged nature of the country and the existence of many caves make it possible for them to survive. They also travel largely and do not always remain in one locality. In autumn, on the highest parts of the mountains, they are tempted to rob the little patches of cultivation which the natives have assiduously tended during the summer and who guard them in consequence. Later still the bears come down to attack the vineyards.

The colour of the bears from Syria proper is identical with that of the Asia Minor species—very pale, with a well-defined collar. They are small

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in size, 78 inches being the greatest length that I know of for a Lebanon bear; another, a female, measured 64 inches in length and 34 inches at the shoulder.

These countries bordering the Levant do not hold much else of interest, except the ubiquitous wild pig, which are found in every jungle of sufficient size. The Jordan Valley abounds in them, while in the swamps and jungles at the south end of the Dead Sea they positively swarm in such numbers that the Arabs have to protect their crops by building thorn fences around them. Wild pig even wander out on to the barren lands, for I have seen them on the desert hills between Damascus and Palmyra, where they must be forced to travel great distances in search of food.

The roe deer and the fallow deer are not likely to tempt the ordinary hunter, for they are exceedingly scarce. Anyone desirous of obtaining specimens in this, the extreme limit of the range, will have a difficult task. Roe deer are found as far south as the high land behind the promontory of Carmel on the Syrian coast, and they exist between this point and Tyre. It is a hill country covered with scrub and dwarf forest. Fallow deer used to be fairly numerous in the Giaour Dagħ, behind Alexandretta, but a very severe winter some years ago killed off all the game, and it is said that none remain.

To describe Arabia as a possible hunting ground seems absurd, for it is practically a closed country; but it holds two remarkable types of big game, one of which may reasonably become the object of an interesting journey and is a rare and beautiful trophy to possess; the other lives in a forbidden land, and so far has never been hunted by a European. I refer to the *Oryx beatrix* and the Arabian tahr. The former was unknown until quite recently, except for native report and "traded" specimens, while the latter retains its reputation of being unhunted by Europeans.

In days gone by, no doubt, the oryx antelope ranged the deserts bordering Moab and Edom, but they are now restricted to the inner deserts of Arabia, in order to reach which is an undertaking of no small responsibility. The natural range of the oryx might be best described as extending around the main sand areas of Arabia. That is to say, the great sand deserts, such as the Nafud in the north-west and the Roba-el-Khali in the south, are probably their true refuge, beyond which they roam as far as pastures and native hunters allow them. The sand belts are the pasture zones *par excellence* in Arabia. In its southern habitat the



THE GREAT NAFUD DESERT—The abode of *Oryx beatrix*.



IN THE JORDAN DEPRESSION.

PLATE X.

THE NEAR EAST

oryx is unknown (except for one specimen in Dr Jayaker's collection from Oman, and certified to have been procured in that country, and live specimens at Aden, said to have been brought from the southern Nafud); it probably inhabits the country inside the coastal belt of mountains, from the Yemen highlands to Oman. In Northern Arabia, and along the Persian Gulf, it is not found, but around the Nafud in the north-west the oryx are numerous and in this locality alone is it feasible to hunt them.

When the Bedawin are not in the neighbourhood the oryx can be found for a certainty at the end of a seven days' camel ride from the Hedjaz railway, east of the Dead Sea. But should there be ample rain the Arabs move far into the desert, and the oryx, no doubt, retreat further away. As no one would visit such a warm and waterless locality in summer, one's chances depend largely upon the season. The Hedjaz railway passes much closer (than seven days' ride) to the haunts of the oryx; in fact, I have seen their tracks within a few hours of the railway south of Tebuk, but that region is forbidden to Christians, misruled by the Turks, and the Bedawin who range the neighbourhood are not powerful enough to grant protection to a European hunter, even if he persuaded them to have dealings with him. By making friends with such a tribe as the Beni Sakhr of Eastern Moab, with the Howeitat, or even the Anazeh of the Syrian Desert, the traveller can avoid the usual dangers of desert travel and reach the haunts of the oryx. It entails some arrangement, a dependable guide, a certain amount of money and ability to put up with considerable discomfort. A light, fast caravan is indispensable. As few men as possible should be taken, every additional detail meaning slower pace, more food and water to carry and less time to hunt. It is essential that the entire caravan be self-supporting as long as it is away from the wells. When water finishes, hunting has to be abandoned. In early spring, during a very dry season, I found the oryx numerous along the western edge of the Nafud sand desert. They seemed to be as much in the sand dunes as on the hard, level stony plain bordering them. The former were covered with tracks, and I should say that they are their true refuge and feeding ground for the greater portion of the year. Excellent grass grows in the sand, as well as numerous peculiar parasites that thrive on the roots of the *ghada* bushes, and are full of juice; these the antelope dig for during drought. It is an advantage to find the oryx in the sand, for then stalking is possible, whereas on the bare plains beyond they may

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be often seen but are quite unapproachable. I have come across them, too, in quite broken country in the hills of Tbaik to the west of the Nafud, where, by the way, there are also many ibex living in remarkably easy country. On one occasion I remember seeing ibex and gazelle whilst examining the tracks of oryx.

This beautiful little antelope is the smallest of its race, an adult male standing only 40 inches at the shoulder and being about 60 inches from top of nose to root of tail. They are practically pure white except for the face and leg markings, and this colour is a very useful protective coloration for them. The record length of horn is $27\frac{1}{4}$ inches long and came from the Tebuk country.

It should be repeated here that the Arabian oryx is the only species of large antelope found in Arabia and the Syrian deserts. The Bubaline antelope (*Alcelaphus bubalinus*) and the addax (*Addax nasomaculatus*), which used to be recorded as inhabiting these regions, do not exist. The oryx, the Sinaitic ibex, the dorcas gazelle, and a few rare ostriches are the only large fauna that range these desert frontiers of Arabia.

The tahr, of the mountains of Oman, is another species peculiar to the Arabian peninsula, this strange wanderer from India (*Hemitragus jayakari*) being one of the few remaining animals to have escaped the attention of European hunters. No one has either hunted or seen it in its natural haunts. This fact, of course, chiefly results from the unfriendly behaviour of the Arab tribes to foreigners, besides the continual state of unrest and quarrelling in which the mountaineers of Oman live. From all accounts the country the tahr inhabits covers a very small area. The main mountain area of Oman, namely, Jebel Akhdar, covers only about thirty miles in length by fourteen in breadth. There is, however, some very rugged country, for, in spite of its name, which gives the impression of cultivation and luxuriant growth, the Akhdar range lifts a bare, conglomerate summit to a height of 10,000 feet. Thus there is a large area of crag and precipice above the cultivated area and the semi-tropical vegetation of the valleys. Lieut.-Colonel S. B. Miles, who was the last traveller to penetrate into the interior of Oman (and that was fifty years ago), describes the Akhdar chain as having a gentle incline on the inland, desert side, with shallow, verdant, well-populated valleys; while its seaward face bears a wild aspect, falling abruptly in steep, precipitous crags, having valleys which are "rugged torrent beds, and passing over a rough and stony passage, difficult to climb and but thinly studded with hamlets, as



THE ARABIAN ORYX, OR "WILD COW" OF THE ARABS.



HORNS OF THE ARABIAN ORYX—Record head in centre.

THE NEAR EAST

cultivation is almost wholly precluded until the more level plain is reached." Crossing the ridge, he spent a whole day zigzagging "down an uncommonly rough and broken face, twisting and turning now down a narrow torrent-bed, now along a smooth and level ledge bristling with euphorbias, calotropis and fragrant oleander, now among crags and boulders, making slow progress, but without any serious mishap." It will be seen that the habitat of the Arabian tahr is very much like that of the Himalayan and Nilgiri races, in that it has plenty of steep country to resort to; but it seems doubtful that the Arabian tahr can have the forest-loving character of the Himalayan species. Jungle is unlikely to exist apart from native settlements, and they are mostly low down. I think it more probable that in the Akhdar ranges the tahr is a purely rock-loving animal and lives high up. Dr Jayakar, who first procured specimens of this animal, said that he thought it lived at from 1,500 feet to 2,000 feet. It remains to be seen what peculiar conditions existent on the 10,000 feet ranges cause the tahr to live so low down. The same authority says it occurs everywhere in the hills, which suggests that it certainly is not confined to the main Jebel Akhdar ridge.

When affairs have quieted down on the coast, and there is not so much suspicion of the European, it would be a most interesting experience to try to find out the exact haunts and habits of this rare animal. Summer must be avoided, winter probably being the ideal season for a journey in these latitudes. The tahr cannot live very far from the coast. A hundred miles from Muscat would take one to the furthest ranges. It is a small animal, only $24\frac{1}{2}$ inches at the shoulder, as compared with the Indian races, which run to 36 and 40 inches. It is not only short-haired, as one would expect in such a hot country, but its coat is coarse and brittle, quite unlike the Indian tahr, and having the same peculiar texture as that of the Arabian oryx.

There is no record of ibex existing in Oman, but in other parts of Southern Arabia, such as the Hadramaut and Yemen, they are plentiful, and attain a large size. This southern race is distinguished as a variety of the Sinaitic. It certainly has a much longer horn measurement, the difference between the record length of either being about 10 inches. Nearly every hill throughout Arabia on its western side supports ibex. Through Midian to Nejd, Asir, Yemen and the Hadramaut, on the inland side, there must be ibex ground at intervals all the way. There should be some good country on the coasts of Arabia facing the Indian Ocean.

THE GUN AT HOME AND ABROAD

Highlands rise quickly above the seaboard, and from all accounts they are not barren, burnt-up, volcanic bergs. The Gara Mountains, behind the Dhofar Plain, are not more than 3,000 feet high, but they are described by the only visitors (the Bents) as possessing fertile soil, park-like scenery, grass-covered and dotted with clumps of sycamore and limes. There should be ibex, and possibly tahr, in those very secluded ranges.

I have seen ibex on little desert hills which do not rise 500 feet above the plain. I have actually seen them on the desert itself, and on one occasion witnessed Arabs running them down with dogs on narrow ridges surrounded by flat desert, on to which the ibex dared not go. The only other game which may fall to the hunter are gazelle, which are to be found in all parts of the Peninsula. In the north the dorcas gazelle is common. Further south the Arabian gazelle takes its place, while on the Oman side the little *gazella marica* has its home.

DOUGLAS CARRUTHERS.

THE CAUCASUS

THE Caucasus as a hunting ground has not been so often tried by big game sportsmen as it deserves to be, for it contains several splendid trophy-bearing animals, two at least of which, the *Capra caucasica* and the *Capra cylindricornis*, are not to be met with in any other part of the world. True it is, that outside the few big preserves game is nowhere very plentiful, but still there is enough to satisfy the man who is contented with a few fine and comparatively rare trophies, and who does not mind working hard for them, in a good climate, amidst glorious scenery.

The sportsman who aspires to success in any form of mountain shooting must make up his mind to "scorn delights and live laborious days"; and it is some sort of compensation in after years, when he looks at the heads that adorn his walls, to find that he values most those that have given him the greatest labour to secure.

It is seldom that two men can hunt successfully from the same camp in a mountain country; owing to the configuration of the ground there are not often more than two beats, and if these are both occupied every day the game will soon be driven out of the valley altogether; added to which there is always the chance that a shot fired by one man may spoil his friend's stalk, as the echo from the sides of the valley will penetrate a long way. Moreover, as the ground never gets a rest, it is soon shot out and constant changes of camp are necessary—a laborious operation in a country like the Caucasus. Should two friends wish to go out to the country together they should make up their minds to separate when they get to the shooting ground. In a comparatively flat country like Africa, where one can shoot in almost any direction, and game is more plentiful, it does not so much matter, but in the hills the sportsman should make up his mind to camp alone.

One of the great difficulties to be encountered in hunting in a foreign country is the language, and in Russia it is no easy matter to find an interpreter who is any use at all when transferred from a town to camp life. I have tried many of them in my time, none of them really good; but on my last four expeditions into the Caucasus I have taken with me one Gregory Makandaroff, who resides at Batoum, and who has proved himself much the best of several that I have sampled. He can generally be found with the assistance of the English Consul at Batoum.

THE GUN AT HOME AND ABROAD

One of the reasons why the Caucasus has been so little visited by Englishmen is probably due to the paucity of literature on the subject.

Clive Phillipps-Wolley, who wrote so enthusiastically of the country as it was some thirty years ago, does not seem to have met with much success on his shooting trips, and few others seem to have recorded their experiences; and although much may be learned about peaks and passes from a study of the records of the Alpine Club, still this does not very much help the hunter.

Besides the difficulty of the language, the sportsman will find that it takes no little time and trouble to get his rifles and camp outfit into the country. An application should be made through our Ambassador at St Petersburg a long time in advance, describing the rifles and the place on the frontier at which they are to be imported, also the approximate date of entry; even when everything seems in order, the delays and annoyances of a Russian Custom House are sometimes very trying.

Although the duty on rifles is not excessive, the traveller will be surprised to find that they are carefully weighed, together with their cases or covers, and the duty charged on the gross weight.

The amount charged on tents and camp outfit is considerable, and I have known the authorities insist on having the tents unpacked and weighed separately from the poles, which takes time and is very trying to the temper.

On one occasion, at Batoum, where I landed, the authorities insisted on opening six sealed tins of tobacco which were to last me for a long trip, as they wanted to weigh the tobacco without the tins; and it took a great deal of persuasion before they would content themselves with performing the operation on one tin only, selected at random, and multiplying the result by six. Another time I was fined three pounds, and thought I was going to be imprisoned as well, for trying to import twelve tins of bacon, as I was unaware that it is illegal to introduce pig in any form into Russia.

In order to avoid as many of the preliminary difficulties as possible, I should advise the sportsman to content himself with the stores he can purchase in the country itself, as there are quite good shops in all the large towns, such as Batoum, Tiflis, or Baku. The Russians make a species of rusk, or dried bread, which can be purchased at any baker's shop and is very useful on the march, as it saves baking, and is probably more digestible than what the camp cook will produce. It is curious that

THE CAUCASUS

tea, so much beloved by the Russians, should be subject to a duty of about two shillings per pound, which makes it always dear, while vodka, which is a Government monopoly, can be bought for one shilling a bottle; it seems a pity that they do not halve the duty on the first and double it on the second, as this would contribute considerably to the sobriety of the country. Good, but very sweet, jam can be got in any town, and condensed milk is to be procured from the chemist and not from the grocer.

Although the stores can be got locally without much trouble, a rifle the hunter must have, and it is always best to take a spare one, in case of accidents. Having once got them through the Customs, should the sportsman contemplate returning another season, the best plan probably is to leave them in charge of some one at Batoum, as I used to do, thereby saving myself much trouble on subsequent visits. After being allowed to import arms, I have never been granted any written permission to carry them; and having once got them through the Customs, have found it a good plan to pack the rifle cases into large kit bags, as a lot of trouble from officious policemen at railway stations may be avoided thereby.

As regards money for expenses, the safest method is to take a letter of credit from London; but it is as well to remember that there are very many saints' days in Russia, when the banks are closed, and time may be saved by taking hundred rouble bank notes, procurable in London, but this, of course, is more risky.

There are several ways of getting to the Caucasus, of which I rather favour the method of shipping everything by sea to Batoum, and joining the same boat at Constantinople by taking the Orient express from Ostend. The return journey may be made, for the sake of variety, by the coastal steamer from Batoum to Odessa, an interesting trip along the north coast of the Black Sea, calling at many ports and giving one a glimpse of the Crimea. From Odessa the train can be taken either via Berlin or Vienna. Or, again, there is a through "train de luxe" from Tiflis to Moscow once a week, with the alternative of driving from Tiflis to Vladikavkaz by the Georgian Road, and joining the railway there. By the last-mentioned route a grand view of the mountains may be obtained, and I believe there is now a good motor car service established.

The Russian trains, though slow, are comfortable, and many of them have good restaurant cars attached, but these are generally overcrowded, as they admit the passengers of every class.

The Russian Ordnance maps, which can be procured from Stanford, in

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London, should be taken. They will be found fairly accurate, on the whole, but those unacquainted with the Russian letters will find some difficulty in deciphering the names.

As regards seasons, the sportsman will probably select the late summer, if in pursuit of mountain game, with the hopes of getting a stag in the early autumn, the roaring season, which generally begins about September 20, being the best time, as they seldom come out in the open, and the forests are very thick. I once got a stag in the winter, but then it is very difficult to get about the country, and there is always the chance of being snowed in and having to abandon one's belongings.

The eastern end of the range is rather liable to be enveloped by a white mist in the month of September, and I have been prevented from hunting for several days from this cause; and yet the atmosphere is sometimes extraordinarily clear, so that I believe I have seen further in the Caucasus than anywhere else in the world. One wonderful half-hour just before sunset I shall never forget. I was near the watershed of the western end of the range, when every cloud suddenly vanished, and a line of snow peaks became clearly visible, which included Elbruz and others still further to the east, presenting a panorama which I have never seen equalled—a scene to make a man take off his hat, in awe and reverence, at the beauty of the universe.

As a general rule, in a hill country one expects to find the largest heads on the highest mountain, just as the finest fruit is said to grow at the top of the tree; but when the altitudes exceed the medium, say 12,000 feet, this no longer holds good, and the very lofty peaks, though of great interest to the mountaineer, are not of much use to the hunter. It is on the lower slopes and shoulders of the really big mountains, a little above the timber line, that game should be looked for.

The highest ground of the Caucasus lies in the centre of the range, between the great peaks of Elbruz and Kasbek, and between these two there are many mountains that will appeal to the Alpine climber. Elbruz, where tradition has it that Prometheus was chained to the rock, towers up some 18,400 feet, while Kasbek has an altitude of about 16,500 feet. It was in attempting the ascent of Koshtantau, which lies to the east of Elbruz, that W. F. Donkin and H. Fox with their two guides lost their lives in 1888. At first foul play was suspected, but it was too late to make any systematic search that season; however, a search party, led by Douglas Freshfield the following year, discovered their final bivouac, and though

PALLAS' TUR (*Capra cylindricornis*)

PLATE XII.



Waldwell
1914

THE CAUCASUS

the bodies were never found no doubt remains as to how they met their deaths. The hunter in pursuit of game is never likely to run risks of this sort, but it must be remembered that there is a good deal of difficult ground to be negotiated when after ibex, more especially in the western half of the range.

If overtaken by darkness on the way back to camp it is much wiser to sleep out under a rock than to run the risk of missing one's footing on bad ground; and when very tired it is easier to go uphill than down, and there is less chance of spraining an ankle.

I remember once, after a long day in pursuit of the *Capra caucasica*, that the light failed us on the way home, and I had to spend the night on a ledge, where I tied myself on with the aid of my belt and boot-laces, for fear that I might go to sleep and fall off. My precautions caused no little amusement to my hunter, Popoff, who thought the position sufficiently uncomfortable to preclude any chance of sleep. On these occasions what an age it seems till dawn!

If one contemplates trying distant ground, with a probability of having to sleep away from the main camp, it is best to take a small *tente d'abri* and a sleeping bag, provided there is a spare man to carry it, though the extra man is not always available. In any case enough food should always be taken in a haversack for an emergency, as it often happens that game is sighted too late in the day for a shot, and by spending the night on the spot an easy chance may be got at dawn. On the south-eastern end of the range the snow mostly disappears in the late summer, except in a few of the ravines, so that there is often a scarcity of water in consequence, and a water bottle as well as an emergency ration of food should be taken; a rubber cup is also a useful thing.

When there is a supply of fresh meat, the usual method of cooking it, and the most appetizing, is by making what the Russians call *shishliks*, that is to say, lumps of meat with alternate pieces of fat, toasted on a stick. This method has the further advantage of doing away with the necessity of a cooking pot. But as the fresh meat one gets on a shooting trip is usually very tough, it is a sound thing to take a mincing machine, which can be procured in Batoum or any large town.

I doubt if it is worth while taking a shot gun to the Caucasus, as one seldom has the weapon handy if a bird is encountered on the march. The snow partridge, though fairly numerous on ibex ground, will probably have to be left alone, for fear of disturbing nobler game.

THE GUN AT HOME AND ABROAD

In some places blackcock are to be met with in considerable numbers, and these birds differ somewhat from those of Scotland, having a longer tail, which does not curve round so much towards the tips.

Woodcock are occasionally flushed, but I have never been able to determine if they breed as far south as this, though I have seen them so early in the summer as almost to preclude the idea that they can have already migrated from the north.

A light fishing rod should be taken, as many of the streams hold small trout, which, though not affording much sport, will be found a welcome addition to the commissariat. It is as well to have both a telescope and a binocular; the former is absolutely necessary to determine the size of ibex heads, and will save many a useless stalk, and the latter is much handier if after stags in the thick forest.

The presence of sheep and goats on the high pastures in summer is a frequent cause of annoyance to the stalker. The shepherds' dogs are the fiercest I have met anywhere, and have to be kept at bay with an alpen-stock, as it would be as much as one's life was worth to shoot one.

The lower slopes of the range are covered with fine forest, oak, beech, birch and chestnut; in the valleys of the south-west, box trees, which have considerable commercial value, are found. The rhododendrons often grow so thickly that it is a difficult matter to force one's way through, especially on a steep slope, where they seem to have a habit of flourishing.

The display of wild flowers is sometimes very fine, and wild fruit grows abundantly. The raspberries are attractive, but I never cared much for the wild pears, though my followers used always to stop and throw sticks at the trees to knock them down.

If a little more care were exercised, I think the cultivation of fruit in this country would prove a valuable commercial asset. Sunflowers seem to be grown for their seed, and I once pitched my tent in a glade near the timber line which was filled with them.

As regards danger from the natives of the country, I do not think there is much to fear now, though in 1907 the whole province was in a state of unrest, and reports of murder and brigandage were frequent, and even the main street of Tiflis was patrolled day and night by soldiers with fixed bayonets. The Abkhassians, and many of the other tribes of the Caucasus, are of a very independent disposition, and will probably demand exorbitant rates for the hire of their horses, but I have never had any serious trouble with them. It must be remembered that a passport, duly viséed at the

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Consulate in London before leaving, is necessary, and this should be carried in the pocket, as it has always to be shown on arrival at an hotel, and on many other occasions. It must be handed to the police authorities and notice given before leaving the country.

Should the sportsman be a bit of an archæologist and lover of romance, he will find much to interest him in the Caucasus, for nearly every valley contains the ruins of some castle or robber stronghold, of which no record remains as to how the original occupier lived and loved and died.

If Tiflis is visited, the Natural History Museum should be seen. The Hotel de Londres, kept by that admirable Swiss lady, Madame Richter, will be found one of the best in Russia.

In the capital of the Caucasus some excellent silver work, in the form of belts, wine ladles and daggers, may be purchased, and occasionally carpets and embroideries of Bokhara and Samarkand, at a more moderate price than elsewhere.

If writing to Russia at any time, to make arrangements in advance, it must be remembered that their calendar is twelve days behind our own, and unless it is clearly stated whether the Russian or English date is intended serious misunderstanding may arise.

The following is a list of the principal game animals of the Caucasus:

The Aurochs.

Capra Cylindricornis, or Pallas's Tur.

Capra Caucasica, or Western Tur.

Capra Ægagrus, or Persian Wild Goat.

The Stag.

Besides the above, which are nowhere very numerous outside the preserves, there are chamois and bears of various sizes and colours, fairly plentiful everywhere; also roe deer, leopard, lynx and wild boar, the latter more especially in the Kuban River district.

The hunter can hardly hope to obtain specimens of all these in one season and had, therefore, better select two or three of the species that most appeal to him, and devote all his efforts to trying to get them first.

THE AUROCHS

THE Aurochs, or European bison (*Bos bonasus*), is now found only near the headwaters of a few tributaries of the Kuban River, and as its habitat is entirely within the preserve of the Grand Duke Michael of Russia, it is not likely that the casual sportsman will have an opportunity of shooting one; moreover, this beast is now considered "royal game," and the Grand Duke himself has to obtain a special permit from the Tsar each season before killing one on his own ground.

His Imperial Majesty the Tsar has a preserve at Bielowieza, in Lithuania, containing a considerable number of these animals. In 1880 this herd was said to contain 600 head, but here they live under more artificial conditions, and it is doubtful if they are quite the same species.

The aurochs is a true bison, and is to be distinguished from the other bovines by the number of its ribs and the mass of hair on the head and forequarters (it also has a tuft of hair at the end of the tail). It is not so drooping in the hindquarters as the American species.

I have seen their tracks and fresh droppings near the source of the Kisha River, which runs into the Kuban, but although I have hunted several of the valleys on the south side of the range, running down towards the Black Sea, I have never seen any sign of them there, nor have I been able to get any reliable information of their existence from the natives in that region. The country they inhabit is very difficult to get about in, comprising, as it does, thick timber, steep ascents and an almost total absence of trails.

It is surprising that an animal of such bulk can get about over the ground it does. When travelling in this region I had to abandon my pack horses at an early stage, reduce my outfit to a minimum, and do the best I could with the few men I could persuade to act as porters.

It was in this same country, before it was forested by the Grand Duke Michael, that that intrepid sportsman, St George Littledale, secured his specimens, male and female, for presentation to the Natural History Museum at South Kensington; and his forbearance from killing a third one for himself, although he had the chance, should be remembered as a noble example of self-denial by all big game hunters.

Although the aurochs can get over quite steep ground, he prefers a

THE AUROCHS

level tract when he can find it, especially if there is a chance of wallowing, and it is in these spots that their tracks are most often seen.

The few remaining specimens in the Caucasus owe their existence entirely to their shyness and the density of the forest in which they dwell.

It has been rumoured for some time past that the Grand Duke Michael may abandon his preserve, as it is very difficult to prevent poaching, and so much ill-feeling has been created by making the natives vacate their grazing grounds, to which they have considered themselves entitled from time immemorial. Should this happen, the game would very soon be decimated, as nearly every shepherd possesses a breech-loading rifle, which is at present kept concealed. On the other hand, it is not impossible that a sort of national park, on the lines of the Yellowstone in America, may be established, and if this could be kept free from poachers it would be a splendid thing for the preservation of big game in the Caucasus.

Were it not for the difficulty of excluding shepherds and their flocks, there are many excellent localities in the range, the sporting rights of which might possibly be hired from the Russian Government at a moderate sum, but as one's sport and peace of mind depends very largely on the goodwill of the natives I doubt if this would answer.

PALLAS'S TUR

(*CAPRA CYLINDRICORNIS*)

THIS animal, locally called Tur, and sometimes spoken of as Pallas's Tur, somewhat resembles the Himalayan burhel in the curve of his horns, but in very little else.

I have never been able to weigh one accurately, but should estimate him to be quite double the bulk of the Ladak sheep.

Whether he is really a sheep or a goat is not quite certain; he certainly has a short beard, but seems to me, in general appearance and habits, to approach nearer to the former than the latter. To whatever family he belongs, he is a fine beast to hunt, and carries a beautiful head.

There is a specimen of this animal in the Natural History Museum at South Kensington, mounted whole, which intending hunters would do well to study. It was presented by the late Prince Paul Demidoff, and the horns, for beauty of curve and general proportions, would be very difficult to beat.

In order to avoid shooting an immature animal, the hunter who has not previously seen the beast alive in its natural surroundings should endeavour to get as accurate a conception of it as possible by studying mounted specimens in museums and, if available, living ones in zoological gardens.

The actual measurements of a fair head may be got from Rowland Ward's book, "Records of Big Game," but by carefully looking at mounted heads some idea of the size of horn compared with the facial length may be got. The first time one sees an animal the horns always look bigger than they really are, and even old hands sometimes make mistakes and suffer a pang of regret when they come to put the tape over the horns.

We cannot all shoot record heads, but the sportsman should endeavour, as far as possible, to avoid killing anything that cannot be regarded as a fair-sized specimen.

The habitat of the *Capra cylindricornis* is the eastern half of the Caucasus range, more especially on the southern side; and one of his peculiarities is that in the summer months, at all events, he is frequently to be met with quite low down in the thick forest. The timber line here is,

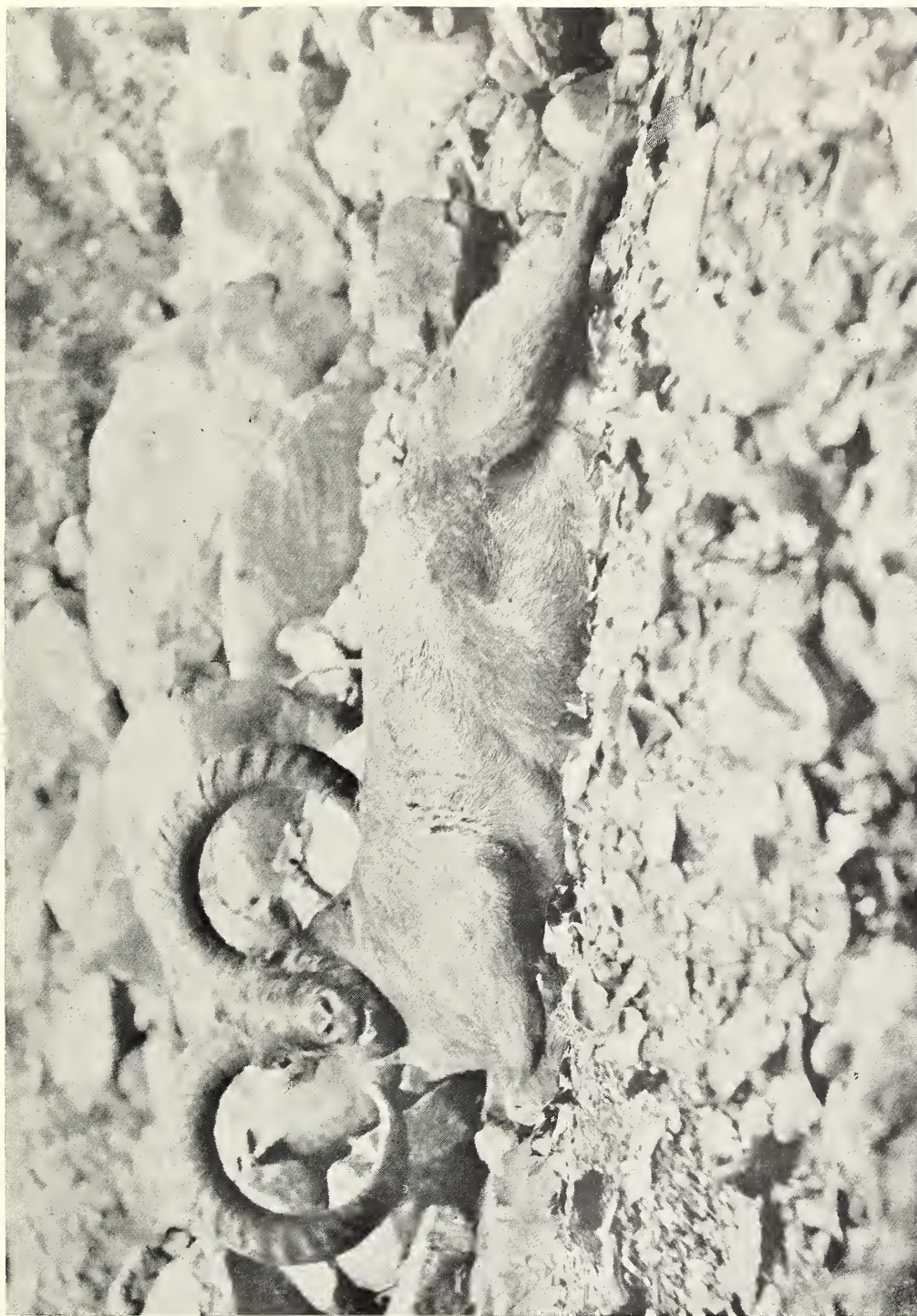


Photo by Mr P. B. Van der Byl.]

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EASTERN CAUCASIAN TÚR.

PLATE XIII.

PALLAS'S TUR

roughly speaking, about 6,000 feet, and I have shot some of my best heads quite 2,000 feet lower than this, where the covert is thick and the animal consequently difficult to spy and by no means easy to approach noiselessly. The Himalayan burhel, on the other hand, I have never seen below an elevation of 12,000 feet; in the summer time he goes a good deal higher still, so that there is no forest for him to take refuge in even if he wanted to.

Prince Demidoff's preserve at Lagodecki is a wonderful example of the effect of keeping ground free from the grazing of sheep and goats, as the place is now full of tur, where not many years ago there were comparatively few. He has a shooting lodge down in the village of Lagodecki and a hut up near the timber line, from which I have seen numbers of these animals. When I was shooting there in 1907 his keeper had captured three young tur, which were subsequently sent to the Zoological Gardens in London, of which unfortunately only one now (1914) survives. It seems curious that this one has not developed the same horn growth in captivity as might be expected in a male of that age in a wild state.

At the time of my visit the young ones were so tame that when the keeper used to stoop down they would jump on his back and stand there.

The young of the goat tribe have a wonderful fondness for climbing on to anything they can, and I have seen two young ibex in Kashmir, which a sportsman had captured, whose favourite amusement was to climb on the top of his tent and balance themselves on the ridge pole.

I have more than once seen several members of a band of tur squat down on their haunches like dogs while surveying the country from a point of vantage. I am not aware whether any other sort of mountain game does this, although I believe it has occasionally been observed amongst chamois.

If hunting tur on the public ground, where sheep and goats are grazing, the shepherds' dogs will be found a great nuisance; they will come a long way to attack the innocent stranger and are the fiercest and most awe-inspiring brutes I have met anywhere; many of them must have a strong dash of the wolf in their pedigree.

How far west the true *Capra cylindricornis* extends has not yet been definitely ascertained, but they certainly exist up to the line of the Georgian post-road, which runs from Tiflis to Vladikavkaz, and from this neighbourhood some horns have been produced which may possibly be a cross between the tur of the Eastern and Western Caucasus. As yet, however,

THE GUN AT HOME AND ABROAD

there are not sufficient specimens available to decide whether they should be treated as a distinct species.

There are many localities in the western end of the range which appear admirably suited to the *Capra cylindricornis*, and I can see no reason why it should not flourish there; but no man has been able to explain why animals sometimes remain in one locality and yet never extend to other grounds not far distant that look every bit as well adapted to their requirements.

I have never seen Pallas's tur on as difficult ground as that frequented by the Western Caucasian species; still, there is a great deal of up- and down-hill work involved in its pursuit.



Photo by]

EASTERN CAUCASIAN TÛR.

[Mr P. B. Van der Byl.

PLATE XIV.

WESTERN TUR

(*CAPRA CAUCASICA*)

THE *Capra caucasica*, also locally known as tur, inhabits the western half of the Caucasian range. There is much more of the true ibex about the animal than its eastern brother, the *Capra cylindricornis*; it is found on worse ground, and I have never seen one attempt to descend into the timber.

Scientists have divided this wild goat into three races: on the extreme west of the range the *Capra dinniki*, then the *Capra severtzowi*, and, lastly, the *Capra caucasica typica*, to the east of Mount Elbruz. The ordinary sportsman will probably be unable to distinguish between these three, and will be fairly safe in calling his animal *Capra caucasica*.

The horns of an ibex are easier to estimate than those of a sheep, and after some practice one ought to be able to guess their length within a couple of inches, with the aid of a good telescope, especially if seen in profile.

It should be remembered that the horns which curve well round always tape better than those that stand up straight from the head. The hunter should always take with him the best telescope procurable, for, in addition to the pleasure of getting a good view of the animal in its natural state, he will be saved many a useless stalk after heads which turn out not worth shooting when approached.

The horns of the *Capra caucasica* are somewhat thicker at the base than those of a Himalayan ibex of similar length, but the animal's general appearance and habits are not unlike those of the Himalayan species.

The best head we have recorded from the Caucasus is one of 40½ inches, secured by St George Littledale.

As this animal lives on the open mountain or bare cliffs, and does not go down into the forest, he is easier to spy than the *Capra cylindricornis*; still, a certain amount of luck is always required to get him. If things go wrong, and something disturbs him, or the wind changes, it is better to abandon the stalk and trust to better fortune another day than to run the risk of frightening the tur altogether from the spot where you have located him. An ibex, if undisturbed, usually returns to the same place, or somewhere very near it, to feed, day after day; his habits are fairly regular, but to learn them one must be in a position to spy him in the

THE GUN AT HOME AND ABROAD

early morning before he retires to his lying-up spot for the middle of the day, as this is often among boulders or in some hollow in the cliff, where he is completely invisible.

The successful pursuit of mountain game needs a vast amount of patience, but those who make up their minds to stick to it day after day are generally rewarded with a fair chance in the end.

The natives can usually see an animal much sooner than the visiting sportsman, who is new to the country, as they know what to look for and where to look for it; yet the hunter with a good telescope can sometimes spy game which is invisible to them. Few things give one greater pleasure than to pick up a beast with the telescope, and, after fixing it on some rock, to watch the faces of one's men as they come to look through it.

On one occasion when hunting the western tur I had the satisfaction of spying a beast which neither my Russian hunter, Popoff, nor a local native could detect with the naked eye, and I had to fix the telescope firmly with stones before I could persuade them that there was anything there.

After making a long detour of about four hours I managed to get right above him, and although the distance was not great I missed the first shot clean, my only excuse being that I was sitting on a very uncomfortable stone slide at the time. Fortunately he ran down hill, and from a shoulder almost perpendicularly above him I had a second chance; this time I heard the thud of the bullet and knew that he was mine.

After travelling about one hundred yards he collapsed; his proved to be quite a fair head, though one horn had been broken off some two or three years before.

This kind of success, when achieved by one's own efforts, gives much more satisfaction than the mere killing of a beast which has been spied by the local hunter and up to which one has been personally conducted.

On another occasion I killed a tur just as darkness was coming on, near the border of the Grand Duke Michael's preserve. The ground was very steep, it was too late to retrieve him that night, and I had to descend about 1,000 feet on the other side of the mountain before finding a place where I could spend the hours of darkness. At dawn it seemed the best plan to make the tour of the mountain and get at him from below; but it was much further round than I anticipated, and on reaching the spot we could find no possible way of getting at him, and ultimately had to leave without the trophy.



Photo by Mr P. B. Van der Byl.]

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WESTERN CAUCASIAN TÛR.

PLATE XV.

WESTERN TUR

I once received permission to hunt in the Tsar's preserve at Krasna Polyan, on the south side of the range. Here his Imperial Majesty has a shooting lodge, which he has never visited and is never likely to see. I went there full of hope, but found, alas! that it did not come up to expectations, as the supervision of one Russian officer and two keepers is quite inadequate to stop the poaching that goes on there. Fortunately there are better hunting grounds in some of the neighbouring valleys, and I did not return empty handed.

The Abkhasian natives in this district are not very easy to get on with, and Russian followers, if procurable, will be found much more amenable.

PERSIAN WILD GOAT

(*CAPRA AEGAGRUS*)

DAGHESTAN, a district lying to the north-east of the main chain, is the only locality in the Caucasus proper where that magnificent wild goat, the *Capra aegagrus*, is to be found; and here he is by no means easy to hunt owing to a particularly annoying habit of taking refuge in the scrub. A good head of this animal is a trophy of which the sportsman may well be proud, but for some unknown reason the horns of this ibex are frequently uneven, sometimes bending in at the tips, while in other instances one horn curves more sharply than the other. Thus it is not often that a perfect head is met with, whereas with all the other species of ibex it is the exception to find one horn differing much from the other.

As the *Capra aegagrus* is not plentiful in Daghestan, and is difficult to get at on account of the scrub, the hunter will probably have a much better chance of success by pursuing the animal in one of the neighbouring districts. This goat has a wide range, and is to be found in most of the big mountain chains of Asia Minor. Ararat is one of its homes, and some good heads have been got near Lake Van. Its habitat extends as far eastward as Scind and the borders of India; it is found in the valley of the Araxes, as well as the mountains on the Persian border to the east of the Caspian Sea. A few specimens are to be met with on the islands of Crete and Antimilo in the Mediterranean; but on Antimilo, where I have also hunted him, the ibex has unfortunately become crossed with the domesticated goat. Moreover, the horns of an island race are always small, owing to deterioration from in and in breeding. It was to the east of the Caspian that the late Prince Paul Demidoff secured a very fine head of 51½ inches; this country has a further advantage as a hunting ground, for it holds a fine sheep of the ural type as well.

All those who have done much big game shooting are probably haunted at times by the thought of animals they have wounded and lost. There is one *Capra aegagrus* head which would be in my collection now had I held my rifle a little straighter, and the vision of him sometimes disturbs my dreams.

I had to take rather a longish shot across a narrow valley, and the bullet

PERSIAN WILD GOAT

struck the beast too far back. We followed a considerable blood trail down a deep ravine where the going got worse and worse, till at last as I was going round a corner, with arms extended and feeling like a fly on a wall, the wounded goat suddenly appeared from a small cave in the cliff within sixty yards, and staggered on round the next corner before I could get to a place where there was a chance of using my rifle.

Of course we followed, but a heavy thunderstorm obliterated the blood trail, and after a long search among the cliffs the following day I had to give it up altogether.

Long shots at game should be avoided as unsportsmanlike and likely to wound only; perhaps on a bare mountain they are more permissible than elsewhere, as if the hunter remains concealed, the stricken beast, unable to locate the direction from which the shot came, will very likely lie down on the first rough ground he comes to, in a spot where he can be stalked again and finished off.

THE CAUCASIAN STAG

THE Caucasian Stag (*Cervus elaphus maral*), locally known as the "Ollen," is to be found more or less all the way along the forests that clothe the lower slopes of the range, but is decidedly more numerous at the western end. It is almost identical with the stags found in the Carpathians and in Asia Minor, and is remarkable for the length of the frontal bone of the skull, which is very noticeable when compared with the heads of Western Europe.

As this stag is a forest-loving animal, the best chance of getting a shot is in the calling season, which usually begins about September 20, but varies a little from year to year, and is sometimes delayed by a continuation of the warm weather; while in some years the Caucasian stag roars much more freely than in others.

The noise he makes at this time is similar to the roaring of other red deer, and does not resemble the bugling of the wapiti. In places where he has been much hunted by the natives he hardly dares to raise his voice at all, but the most likely time to hear him is at early dawn or in the very late evening. Owing to the echo in a mountainous country it is very difficult to locate the animal from the sound, and a great deal depends upon whether he has his head turned towards you or away. It takes considerable practice before one can tell the difference between the call of an old stag and a young one; it must be remembered that the most noise is generally produced by a medium-sized stag, and the real old fellow, as a rule, contents himself with a deep short roar and a few grunts.

Having located him by the sound, one must endeavour to approach as quietly as possible, paying particular attention to the direction of the wind. It is very difficult to pass over the fallen leaves of autumn without making a noise, and here a pair of rubber shoes may come in useful; but no one can walk silently over the leaves of the beech tree, which are particularly noisy.

The pursuit of the stag in thick timber can hardly be regarded as so fine a sport as ibex hunting on the open mountain, where the beast can be spied with the telescope, and the stalk carefully thought out; still, there is a great charm in wandering through the woods, and the heart of the hunter will always thrill at the sound of a stag's roar.

Caucasian stags carry a very heavy body, fully equal in weight to those

THE CAUCASIAN STAG

of the Carpathians. The antlers of some are particularly fine, and are the more attractive from the fact that one good pair always differs from another, and has beauties peculiar to itself; whereas the horns of both sheep and ibex have so strong a similarity to each other that a large collection of them waxes monotonous.

One of the reasons why the Caucasian stag carries so large a head is probably due to the fact that there are so few deer on the ground, and the number of hinds to each stag seems less than in most places. Why there are so few hinds I have been unable to determine, but it may be that the poachers, who hunt mostly for meat and have a difficulty in selling horns, may find the female easier to shoot; it is also possible that the hinds fall an easier prey to leopards than the stag. The most hinds I have seen with a stag in the Caucasus was six, and usually the number is only one or two; sometimes I have wondered whether there were enough wives to go round, when I have heard several stags calling at the same time and have been unable to spy a female at all.

The stags do not seem to come down much in the rutting season; in fact, the best stag I ever saw was just above timber line towards the end of September. This was one of the few occasions that I have had a really good view of the animal in the open, and then, in spite of desperate efforts, I failed to get between him and the covert in time.

I got quite a good stag one year in a valley near Gagri, on the Black Sea, by staying till November and tracking in the snow. I had, however, to leave sooner than I wished, as it was a spot very difficult of access, and a heavy fall of snow would have obliged me to abandon everything and make a dash for it.

I have never tried hunting them in the early spring, just before they drop their horns. This is accounted the most deadly time for the barasingh stag in Kashmir, and it is quite possible that it would pay to try it in the Caucasus. The fallen leaves would have rotted by that period, and walking on snow is noiseless unless it has a crust on it; but the sportsman would have to depend on tracking and still-hunting, as there would be no "calling" at that season to guide him.

The best stag that ever fell to my rifle I got so late one evening that in another ten minutes I could not have seen the sights. We had crossed the valley hurriedly in response to a single deep roar, and were lying at the edge of a small clearing, where we found a young stag and two hinds quietly feeding. My hunter, Popoff, implored me to shoot, but I

THE GUN AT HOME AND ABROAD

felt convinced that the stag in view was not the owner of the voice I had heard. After waiting about a quarter of an hour I was well rewarded, for the big one, not liking the attentions of his smaller rival to the hinds, suddenly emerged from the trees beyond and chased him from the field; he then marched proudly to a small rise in the ground and, standing nearly full face to our position, emitted a final roar; as the echoes died away the bullet caught him at the point of the shoulder and he was mine.

THE CHAMOIS

THIS sporting little animal is found all the way along the Caucasian Range, as a rule not very far from the timber line. The Caucasian race does not differ very much from those of Central and Western Europe; but these chamois are known to exist as far south as Lake Van, in Asia Minor, and it would be interesting if some wandering sportsman would bring a complete specimen from there, to ascertain if they possess any special characteristics.

The horns of the Caucasian chamois do not seem to run quite so long as those of Central Europe, and it is a pity that an animal so attractive to hunt does not carry a finer trophy. It is no easy matter to distinguish between the male and female at shooting range; the horns of the latter are, however, rather more slender, and as a rule curve over more at the tips.

In the Caucasus the chamois is more plentiful than any other kind of game and is not inordinately wild; as well as being a nice beast to hunt, his meat is a useful addition to the commissariat. The so-called chamois "beards," esteemed by continental sportsmen and worn as trophies in the hat, are really a collection of the long fringe of hair growing down the spine; to get this of any length a specimen must be killed in the cold weather.

BEARS

BEARS are found throughout the Caucasus, and in some localities are quite numerous. They vary considerably in size and colour, and probably consist of at least two species. One, a grey bear, keeps mostly to the high ground, and frequently has a whitish collar; the other, a brown bear, is a good deal the larger in size, and is usually found in the forests below. I once saw a very large brown one asleep at the foot of a cliff some way above the timber line, but as I was expecting to find ibex in the vicinity I refrained from firing for fear of disturbing the ground. On this trip I saw seven bears that I might have had a shot at had I been so minded.

It is unlikely that the sportsman will visit the Caucasus solely to shoot bears; moreover, during the summer and early autumn, when he is probably after ibex and stags, the skins are at their worst and hardly worth having.

As beasts of the chase bears do not offer much of interest; but there is a great fascination in watching them through a glass, and a good skin or two varies the bag and may be appreciated by friends at home.

The country is so rough and difficult to get about in that I do not think these animals could be located and shot in their winter quarters, as is done in some of the flatter parts of Russia.

The best time to hunt bears in the Caucasus would probably be in the spring, when they first wake up from their winter sleep; their coats are then in good condition.

OTHER GAME ANIMALS IN THE CAUCASUS

IN addition to the animals described in the foregoing pages the sportsman may meet with an occasional roe deer while still-hunting in the forests; there are wolves and lynx as well, but these are both extremely shy, and if seen at all usually appear at some inconvenient moment when the rifle is not handy.

In certain localities wild boar exist in considerable numbers for those who care for that kind of shooting.

As regards clothing the same kind of garments one would wear stalking in Scotland will be found quite suitable in the Caucasus; but for hill climbing in hot weather something rather light is an advantage.

On most of the ground well-nailed boots are the best form of foot gear. A pair of rubber shoes should also be taken; these can be carried in a rucksack, which is the most convenient means of packing miscellaneous property.

P. B. VAN DER BYL.

PERSIA

LOOKING southward from some high point in the Elburz Range, a panorama lies before one of endless plains, varying from *lut*, meaning true desert, to *dasht*, the name given to plains of a less starkly arid kind; dry and treeless certainly, but sprinkled here and there with insignificant shrubs and camel-thorn, nature's apology for vegetation in adverse circumstances. Splashes of white, shivering in the mirage, where once were lakes, meandering ravines where once flowed rivers, sandy beaches where in ages gone by rolled seas. Jagged hills rise sharply in chains and islands, and fade away into the faint, irregular line of the horizon. Imagine thrown over the whole a transparent veil of those vague half-tones of colour that lend a magic to earth's driest regions, and you will have a picture typical of the plateau of Iran; its plains roamed over by gazelle, its stony hills the dwelling-places of ibex and wild sheep.

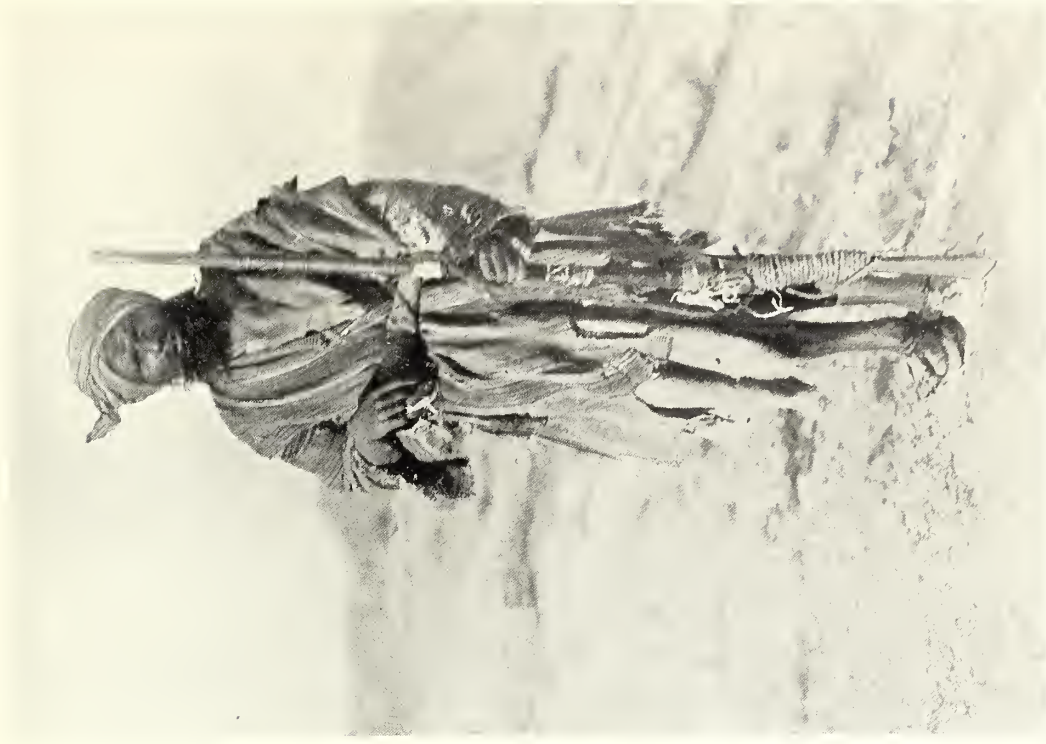
Turning round and facing north, what a change wrought by rain-laden winds! Up to your feet the hill-sides are clothed with deep green forest, and no bizarre tropical growth either, but good, honest, homelike kinds of trees, oak and ash and elm, maple, hazel, sycamore and many another. Along the crest line, grey naked crags burst through the green and mark the boundary between the well watered Caspian provinces and the parched hinterland. The straight line of horizon is that of the blue Caspian, or, further east, the sands of Turkestan. In the air the sound of water, the murmur of bees, while from the forests below may come the roar of a tiger, the call of the maral stag or the crow of a cock pheasant.

Let us take first a glance at the game of the central plateau. When the writer first went to Persia, he was told by one who had some experience of the country that every plain held gazelle, every range ibex and urial, and the dictum is not far from the truth; but the qualification should be made that Persian plains are very broad and the ranges very long.

Gazelle are of two kinds: the Persian (*G. subgutturosa*), a graceful beast with black, polished horns running up to fifteen inches or so in length, and a rather smaller gazelle with less lyrate horns, called Kennion's gazelle (*G. fuscifrons*). The females of the latter are horned, of the former hornless. The Persian gazelle is common all over the country and is no doubt the same beast that is found in most parts of Central Asia; while Kennion's is only known to exist in Persia's south-eastern corner, its



SHOOTING GROUND IN THE ELBURZ RANGE.



A SIESTANI SHIKARI.

PERSIA

northern limits extending—as seems right in an animal that is nearly allied to the Indian gazelle—as far as the line lately drawn to demarcate the British commercial sphere.

Both gazelles inhabit the same kind of ground, plains so flat that they appear, and are, hopeless from a stalker's point of view. Here they feel safe, and if found on more broken ground they fly to the level for safety, as an ibex will to a precipice. Stalking these gazelle is indeed heart-breaking, for even if you do by chance come on them in suitable stalking ground—and this is more common with Kennion's than with the other—it is long odds they will have moved on and be out of ken by the time you have got your stalk done. Nor can any good be done by trying to stalk gazelle behind a horse or camel, as is done in India. They are too wary for any such devices. One day you will see a party of bucks in single file stepping daintily across the glistening surface of a dry salt lake, startlingly vivid; they scatter and are gone like a mirage-conjured vision. Another time their presence is marked by a mere flicker of white on the far level. On another occasion perhaps they suddenly show themselves among the camel-thorn bushes, actually, it may be, in shot, but gone before you can raise a rifle. To the writer, at one period, after some experiences of this kind, Persian gazelle seemed scarcely to have a real existence: afrits, jinns, they might be, mere emanations of the desert, but no fit subjects for pursuit with the rifle. Gazelle can, however, be shot by sporting means and on these plains, and the method, called by the natives *ahu-gardani* (literally, gazelle turning) is thus wise.

You and your shikari ride along the plain, taking parallel courses a few hundred yards apart in order to cover as much ground as possible. Your mounts may be horses or camels, but the former are much preferable as being quicker to turn. Gazelle are spotted. They have seen you, too, naturally, and are scouring the plain, nor do they quiet down to a walk till below the horizon. You and your shikari, now together, follow at a walk. After riding some time, it may be a mile, it may be several, you see them again and continue to walk after them, taking a line a little to one side, patiently and persistently. Thus you continue, not appearing to notice them, till after a time you gain a measure of their confidence, if not of their esteem, and they allow you up on one flank to within three or four hundred yards. You find after a bit that keeping this distance you can manœuvre them about. This at least is what you hope for! You then slip from the saddle on the far side from the gazelle and drop flat behind

THE GUN AT HOME AND ABROAD

some tuft or excrescence. Your horse's reins are caught by the shikari, who goes on without stopping. In the course of the next half hour or more, if he is observant and patient, he will be moving the herd up towards you. About this time if you become aware of a sharp stone running into your elbow, you have to bear it, for a move behind your all too insufficient cover would spoil everything. You feel anxious about the wind, for though gazelle trust their eyes more than their noses for protection, they cannot be brought up in the wind's eye. Many, many are the slips possible, and the first fair chance offered must be promptly taken. By the time they are within long range, what with the trouble the herd has given you, what with the noble size of the horns of that buck that will—confound him!—keep fifty yards behind the rest, what with half a dozen other things, I know of no situation more likely to induce an attack by that insidious microbe, buck fever!

Persian shikaris all say that *ahu-gardani* is easier in very cold weather than at other times, as the gazelle then keep moving during the night and are in consequence lazier in the daytime. This, however, does not accord with the writer's experience.

Gazelle may often be got when one is on the march by taking a detour from the caravan road. Not so ibex. "The high hills *are* a refuge for the wild goats," and the business of ibex stalking in Persia must be carried out with due seriousness and preparation. Your little camp will not be at a village, one of those man-made oases of Persia, where humanity, with extraordinary labour, manages to extract a little stream of water from barren hills, but at some natural spring in the range. The streamlet is barely born before it ceases to exist, but the dry earth returns grateful thanks for the smallest benefits by a touching little display of loveliness. For among these parched crags, with their intense contrasts of light and shade, what can compare in beauty with rocks glistening wet under a green tree, clinging maidenhair, a pool of water, a few flowers of subdued tints?

Near by there may be some nomad shepherds' black tents, in which case local talent will be enlisted as guide or shikari. The start has to be made betimes, so as to reach before the sun the top of the ridge that frowns blackly down on your camp; so up you go with the light feet of early morning, following the leader. To one who has experience of Himalayan shooting and remembers the terrible long climbs that precede the moment when it is worth while taking the glasses out of the case, the ease with which one clambers up the grim-looking Persian hills is as pleasant as it



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AHU-GARDANI.

[Messrs Wm Blackwood & Sons.



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LOADED UP.

[Messrs Wm Blackwood & Sons.

PLATE XVII.

PERSIA

is surprising. In this country a climb of more than 2,000 feet to gain a spying-point is rather the exception.

A word here about the quaint figure clothed in a faded and tattered blue robe that in these Persian highlands takes the place of homespun-clad Duncan or Donald. On his head a dirty skull cap, over his shoulders a wondrous old matchlock, its spiked rests sticking out like the prongs of a haymaker's fork, hung about with powder and bullet horns, the shikari, spare in build, lean of leg, steps softly from rock to rock, foothold to foothold, with surprising ease and balance. Persia has been likened to another place, not usually mentioned in polite society, in two respects, the scarcity of water and the nature of its inhabitants. About the correctness of this remark I for one am not disposed to argue, but I would at least interpose a word in favour of the Persian shikari, for, like hunters all the world over, the good in him much outweighs the bad. He has, however, no use for your glasses. He probably thinks, if he thinks about the matter at all, that such aids are only intended for eyes of less perfect efficiency than his, and it must be admitted that little in the way of game escapes them. As he moves slowly along, his hand shading his eyes, he knows exactly where to look. He examines the grazing grounds of the morning, peers into the dark, cool chasms where the ibex lie up during the heat of the day. He knows, above all, what to look for. You, in the meantime, may spy the more distant ground, and if you can manage to pick up a herd with your prismatic binoculars before he does with his unaided sight you will have every right to be pleased with yourself.

Some of the crags are ugly enough, but the rock is usually hard and sound. Though for all sorts of ground and conditions of weather there may be, and doubtless is, nothing in the way of footgear to beat the "well-greased shooting boot," the article *du pays* is, as usual, worth a trial. On the dry rocks of the Persian plateau it would be hard to find anything to equal the *giva*. This is a shoe of which the cotton uppers are woven in one piece, stout but elastic. There are no laces, the shoe being sprung on to the foot, where it remains clinging, like one's own skin. Both feet are made exactly the same, but a little wear makes them an absolute fit. The soles are also of cotton, treated in a way that makes them hard and lasting, but pliable, and having on rock a "high coefficient of friction." They are very light and give one a very blessed feeling of confidence on bad ground.

The Persian ibex is *C. aegagrus*, the animal supposed to be the father

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of domesticated breeds of goats. He is otherwise famous as the bezoar goat, the beast that carries about in its system the stone of this name, believed in olden times—and in Persia and the East still—to be possessed of all sorts of magical properties. Bezoar-bearing bucks are, it may be noted, extremely rare.

The biggest ibex are found on the biggest precipices, where for years they have defied their foes, panther and shikari, till their coats have grown grey and their horns have approached the almost complete circle for which one looks and, I may say, rarely finds. The finest head the writer has shot, or seen, measured $47\frac{1}{2}$ inches, but no doubt bigger ones have been, and will be, shot.

When disturbed these ibex can never, like their relations of the Himalayas, lose themselves amongst inaccessible snowfields and glaciers, they make instead for the nearest big scarp of rock, where they may sometimes be stalked again. I remember a herd that had gone off after an unsuccessful stalk, and when found again were in possession of an ancient ruined fort built by the fire-worshippers in the days of their persecution. It was on the highest point of the range, a dizzy crag, and whether from the point of view of the former occupants or of the ibex, was a well-selected retreat, for there was but one path up, and now the scimitar horns we could see against the sky showed us that it was well guarded. So we had to leave them there to the companionship of the ghosts of the old Magians. Unlike the habits of the Himalayan goats also is the way in which these ibex hide themselves. Once I made a stalk after a solitary ibex up a hill, the top of which was a bare, broad limestone. On getting there he was nowhere to be seen. A shout came from one far below whom I had left to keep an eye on the beast. The shikari with me understood the shout and pointed to a little cleft in the rock a few yards in front of us. The cleft was not more than a couple of yards broad and had a few bushes growing out of it. Nothing was to be seen, and the shikari made a noise. No result. More noises! Still nothing happened. Then he hurled a great stone, and out the ibex bolted. He dropped at about twenty yards' range.

That day I came on panther tracks that were certainly not half an hour old, but there was nothing to be seen of the beast that made them. The sportsman after big game in Persia will often find traces of these wily cats, but he will be fortunate if he ever gets a shot. The only plan to try is that of tying up a bleating goat near where there has been a kill or a panther has been seen, but they are great wanderers and success will only



BEZOAR STONE (egg-shaped stone in centre), natural size.



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URIAL COUNTRY, SEISTAN. "A SALT SPRING."

PLATE XVIII.

PERSIA

fall to the very patient or the very lucky. Persian panthers are, however, worth some trouble. Some of them assimilate very closely to the snow leopard, while the marking of all I have seen has been different to that of the Indian panther or leopard.

In Persia, as elsewhere, the sheep inhabit more open ground than the goats, and make up for it by having powers of scent and sight that are perhaps better developed, though let no one think that the ibex is at all lacking in these respects! Most of the ranges hold urial as well as ibex, and very fine heads are to be shot by anyone with leisure and opportunity. They are found both on the barren ranges of the Persian plateau—generally less barren than they look—and on the greener hills of the north. In the west the urial approximate to the Armenian type, of which a characteristic has been said to be the way in which their horns curve backwards to meet over the back of the neck; but horns of this type are occasionally found, and have been shot by the writer, near the most eastern limits of this sheep's range, in the Himalaya. A very fine sheep is found on the northern slopes and spurs of the Elburz, which has been named *O. vignei arkal*. There is yet another kind—I speak with reference to the shape of the horns only—in the ranges in the north of Khorassan. The latter also have very handsome heads, rather recalling in shape those of the Tibetan ammon, though of course smaller. The sheep found in Seistan and the Kainat, on the other hand, seem to be very similar to the urial of Baluchistan and the Punjab.

As regards the vexed question of nomenclature, the simplest, as well, probably, as the most correct course, would be to call all these sheep, without distinction, *Ovis vignei*, to which, if further classification is wanted, the name of the district should be added.

Generally speaking, the sheep are found on the less arid and less precipitous slopes. They require grass, and their habits in consequence tend to be migratory, as an instance of which I remember once passing through some ground in the ranges west of Seistan where every rounded hill-top seemed to be occupied by a ram or two. A note was made of the place for future attention, but when the time came, only a few weeks later, the sheep were all gone.

In this country game has to be worked for very hard, and the sportsman more often than not returns to camp "clean." There is, however, an elixir in the air of Persia that stimulates, a pleasing sense of solitude and romance. Though the business of the day is connected with ibex or urial, there are many other things that invite thought and speculation.

THE GUN AT HOME AND ABROAD

You do not require to be a naturalist to enjoy noting the wild animal and plant life that surrounds you and to observe life's struggle with environment; or a historian to repeople in your imagination the stony plains and hills with some of those whose wars and struggles have made Persia's stormy history. Over the plain you are spying for gazelle once moved, like a tide of human migration, the legions, it may be, of the Macedonian Alexander; amongst the beetling crags that throw their shadow athwart the level were once hidden the secret lairs of the assassins; near by those distant mounds the plain was once dotted with the camp of the great Nadir Shah. Few are the places in this land that, in one's imagination at least, are not historic.

The best district for urial in Persia—and probably in Asia—is the hill country that lies south-east of the Caspian, where the Elburz chain is split up into a number of small spurs and subsidiary ranges, the Kopet Dagh and others. It is impossible to imagine a greater contrast than this country presents to the plains and desolate hills of the Persian plateau. Streams of water, their banks often fringed with dense reed brakes, meander gently towards the sea; while from grassy savannahs, grazed over by the flocks of Turkoman nomads, hills rise with gently rounded outlines, presenting a wonderfully beautiful landscape of woods and grassy braes. The sheep are found in the open ground, which from a distance looks almost down-like, albeit covered with long waving grass. On these hills I have had four stalks in a day after different herds. Once I saw a mixed herd of at least three hundred sheep that raised a cloud of dust like an army as they swept across a dry ravine, and immediately after I found a herd of forty hoary old rams. The illustration shows the head of a ram that was picked up on this ground, which with $45\frac{1}{2}$ inches of massive horn constitutes a world's record. The difficulty here lies, not in getting a shot, but in deciding what head is good enough to shoot. It is impossible to make a long stay in the country, difficult indeed to get there at all, and a compromise has to be made between shooting whatever you first see and losing good chances through too much ambition. One must always remember with the unsophisticated shikaris of Persia that it is meat they are out for, not horns. They are quite incapable of judging the size of a head, so the sportsman has to do this for himself. As a working rule I would say, shoot any ram whose horns show the smallest commencement of a second turn. Again, after a herd has been spotted, the shikari's idea is to get to a point whence you can get a shot at *a* ram, not *the* ram, a spot whence



MARAL STAG.



THE BIGGEST RECORDED URIAL.

PERSIA

you could not fail to drop an animal with a shot fired into the brown, followed if possible by more shots into a disappearing brown, and more dropping! One must therefore *use* these people, who have an excellent eye for country, but keep the command oneself.

Let me describe an actual stalk as it happened. Fifteen rams are lying just below the top of a distant rounded hill, a typical sheep's position, affording a good view all round except one, but from that side they would be warned of danger by the wind curling over the brow of the hill. The big glass shows several worthy heads, but they are too far to say more about them. The stalk begins with a plunge down into a deep, winding ravine, full of high grass and blackberry bushes. Then across a stream overhung by willow trees, up a *nala*, and so to the top of the ridge on which the rams were lying. We have decided to accept the risk of the wind, so work round to the back of the hill and crawl over the top. Nothing is visible from there. We retreat and try again a little further on. The rams are all lying within fifty yards of me! Of three I can see the bodies, of more the upper halves of their bodies only, of some only the head, of another only the round of a great massive horn. There are more out of sight below the curve of the ground, but no means exist of reaching to any spot whence one could get a view of the whole herd. A difficult position indeed! A retreat and crawl to another point gives no better result. Any more craning of the head, any further liberties taken, are almost certain to lead to disaster. There! One ram has already seen me. He is on his feet and I am looking straight into his white face. In another second they will all be off. The standing ram looks a good one; he may be bigger than he looks. (How rarely is such a hope justified!) But this is no time to wait or deliberate, and he drops to the shot. The rest of the herd lose no time. I can only hear a retreating clatter of stones. Running forward, I sit down to use my glasses. They are visible, going hard on the opposite slopes. Now how about the ram that brings up the rear of the herd? A real big 'un and no mistake! He must have been just out of sight when I took the shot. Now they are all gone and I go back to the shot ram. A fair head of 34 or 35 inches, but who is content with the second best out of a herd, and he may not even have been that! Well, well, the word spoken, the arrow from the bow, as the Persians say, are beyond recall, and so was that shot of mine. But how a missed chance of this sort goes on rankling!

In the country I have been speaking of, if one's luck was in, very much in, one might in the same day shoot a urial, an ibex, a maral stag, a tiger

THE GUN AT HOME AND ABROAD

and a bear, not to speak of such small fry as gazelle, roe and pig. The sheep ground has already been noticed. Ibex, with, I think, heavier horns than are found on the dry ranges, live among the crags; deer, pig, tiger, and roe frequent the forests, gazelle the plains below. The country is no doubt peculiarly favoured, as the nomad tribes that live in these parts are too intent on their own feuds to do much hunting, for the country is on the march between Turkoman and Kurd, amiable people that shoot one another at sight.

The maral stag, after the manner of his kind, frequents the deep forests. The proper season to shoot him is, of course, the rutting time, which begins about the first of September. Local shikaris also recommend the early spring, before the horns have been dropped. At these seasons the stag may be found early in the morning and in the evening on his feeding grounds, the open glades, or the bare slopes of the range. As the latter are very often covered by a thick growth of thorn, the animals are often as hard to find in this as in the real forest. Occasionally a stag may be seen crossing the open down-like "sheep" ground, as they go from one forest to another, but though one may hope for, one can hardly expect such luck as this. During the day the deer remain secluded in thick forest, and the only plan is to try what in America is called "still-hunting."

Roaring seems to go on intermittently as late as the first week in October, and often, when it seems to have stopped altogether, a spell of colder weather, with rain from the Caspian, may bring it on again. The local people use a hollow bit of ibex horn (*gaokul*) to call the stags when they are roaring, and with it make a passable imitation of the noise, which is a curious mixture between the roar of a Scottish stag and the mooing of the domestic ox. The old man I saw using this instrument once only succeeded in getting a stag to answer him, but possibly his failures were due to its being too late in the season. In the writer's experience a stag rarely roared often enough to make it possible to follow and shoot him in the forest, particularly as at this season they always seemed to be on the move. The roaring, therefore, save for giving one the satisfactory assurance that a stag was there, was of little real help. The presence of deer—more often, I should say, their late presence—may sometimes be detected by a sweet bovine and quite unmistakable scent. Whenever my shikari got a whiff of this he used to get to leeward and take extraordinary pains in working up wind, evidently hoping to come on the deer. We were never successful in this curious proceeding.



CALLING DEER.



STAG GROUND. ELBURZ RANGE.



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KURD SHIKARIS.



[Messrs Wm Blackwood and Sons.

REED BEDS. TURKOMAN COUNTRY.

PERSIA

The slopes in the forest are often steep and the ground very slippery. Persian *givas* are here useless or worse. Indiarubber soled boots might be good, but as the ground is in the morning wet with very heavy dew, I should think shooting boots with new hob nails would be about the best thing to wear. Thorns are very bad and gaiters are therefore better than stockings.

On the whole, the pursuit of the maral stag must be pronounced an unsatisfactory form of sport. In this way: that you may be on the right ground, you may have heard stags roaring, you may spare yourself no hard work, permit yourself no slackness of mind, make every step a subject of conscientious and meticulous effort, and yet never see a good stag. Yet it little behoves anyone who can spend some autumn days in that country to grumble, whether at the "unsporting" ways of deer, his luck, or any other thing.

It is the early morning, when hopes are high. You make for the ridges to spy the open ground. The dew sprays as you brush through the long grass. Through a corner of the dark silent forest, by fairy glades, down into hollows where night's stagnant air strikes cold and damp, over open shoulders redolent with aromatic herbs, in the day time gay with wild flowers, at this hour grey and colourless. You pass warily, hoping at every step to see the dark forms of deer. A sudden crashing of branches close by turns you to stone. You have surprised some large animal more wary than yourself. The sky becomes suffused with colour, and presently from behind the dark hills beyond the mist-hung plain the sun shows his glory, and the dim, grey landscape has become painted in living colours. The rich greens of the lower forest are still untouched by autumn chills, but higher up are splashes of copper, while round the base of the grey crags, and climbing up their riven sides, the birches flaunt their pure gold. The sun grows hot and you reluctantly realize that that chapter in the day's work is closed. Breakfast is eaten and steps are turned towards the deep forest. About the still-hunting, too, there is a charm, but it may be not far removed from tedium. You creep silently—or as silently as possible—through the woods. Through solemn aisles, cool and still, across deep-cut coombes with tumbled rocks, clothed in ferns and mosses, over open sunlit spaces, odorous with flowers. There are signs enough of deer to prevent hope wearying. You come across the mud hole where a stag wallowed last night, ground ploughed up by a battle royal. Your rifle is ready in your hand—"There's no bell an' candle in this yer play, you got to be thar waitin'"—and so on through the hot hours.

When evening draws near it is once more time for the open ground. You

THE GUN AT HOME AND ABROAD

take up your position on a shoulder whence a wide expanse can be spied. You are tired enough to be content to sit still, and maybe light a pipe, and it is satisfactory to think you throw away no chances by doing so. Glasses wander from point to point. Dark forms show up in a far green hollow, but they are nothing but pig, intent as ever on their never-ending quest for food. Perhaps you catch a glimpse of a roe among the trees. It may be you are suddenly aware of the stag you have come so far to shoot standing waiting in the shadow by the edge of the forest. How long has he been there? How was it you did not see him before? It may even be that the king of the jungle himself stalks by. Your calm may be changed into strenuous up and doing by some such sight as these, but it is also more likely that it will not. In this case you finish your pipe in peace, watch the evening stealing across the sky and so back to camp planning fresh things for the morrow.

The maral stag seems to be a local variety of the race found in the Caucasus, Asia Minor and the Carpathians, possibly in Central Asia also. The records given in Rowland Ward's book, however, go to show that Persian heads run smaller than with the western types. Antlers from this country are generally rather straighter in the beam than is usually considered consistent with beauty. Skulls with over fourteen points are uncommon, the best the writer has ever seen being one with sixteen points hanging up in the Customs House at Bandar Gez.

A word now about the other fauna of the Mazanderan forest. Roe are scarce. In two visits to this part the writer had only one chance. That came when it was not desirable to disturb the forest by a shot, in other words when after a stag that had been heard roaring. Pig one meets in extraordinary numbers, many of the boars being very big, but shooting them would be useless, as none of your Mohammedan followers would touch them. Often, no doubt, as they go stampeding through the forest they do the sportsman a bad turn by sending off nobler game. It is difficult to understand why the bears that inhabit these forests are as rare as they undoubtedly are, for food is very plentiful and they have no foes to persecute them. The writer, though coming across their tracks occasionally, never saw one. They are, no doubt, a variety of *Ursus arctus*.

It was my fortune twice to come across tiger in this country. On the first occasion, as I was sitting spying one evening, he walked just below me, and I shot him without having to move more than a few yards to get a clear view. The other time the tiger was spotted lying down sunning himself in the long grass some distance off. I made a stalk, but he had



GAZELLE HEADS. PERSIA.

Upper row: Kennion's Gazelle.

Lower row: Persian Gazelle.



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IBEX HEADS. PERSIA.

[Messrs Wm Blackwood & Sons.

PLATE XXI.

PERSIA

moved further down the hill and was half hidden in high grass. To make a long story short I wounded him, and after following the blood a long way through very disagreeably long stuff lost him. The tiger shot was a heavy, short-tailed beast, and would certainly have been accounted a big tiger in India, and the other seemed as big. In Curzon's "Persia," tigers of "gigantic size" are spoken of as found in the Caspian provinces. My Persian tiger's coat, shot in October, had about the same length of hair as a good "Christmas" tiger in India, and the colour was similar. Another tiger skin I saw from this country was much tawnier in colour, and the stripes duller. I was told at Rowland Ward's establishment that my Persian skull was a little broader than an Indian skull.

Now whether I was unusually lucky in seeing these tigers it is difficult to say. I do not think any other of the not large number of sportsmen who have visited the country have so much as seen one. They are reported by the country people to be plentiful, both in the forest and in the reed beds below the forest, but this, of course, goes for nothing. It would be very difficult to make a *bandobast* for tigers after the Indian method. Apart from the initial difficulty of finding animals to tie up, I cannot imagine a tiger coming to a tied-up pony or goat—and it would be difficult to get anything else—on account of the swarms of pig in the place. However, tying up might be tried, and a shooting trip with tiger the chief object would be a very interesting one. I am inclined to think the best time for such an expedition would be in winter, when the jungle would be bare and snow on the ground, for tigers might then be tracked. It is possible, however, that the snow drives most of the tigers into the reeds, where they would be very difficult to circumvent. My shikari, however, said that they remained in the forest and could be tracked, and the tip is therefore given for what it is worth. It is what I would try for myself if I contemplated another visit to this country.

Though it is impossible in the space at my disposal to attempt anything in the nature of a guide to those who would visit Persia for sport, I will conclude this chapter by indicating very roughly the districts where the different kinds of game may be met with. But a word first as regards season. The summer is very hot and animals lie up all day in places where it is very difficult to find them. The dry parts are not unhealthy at this season, but the heat makes shooting a toil. In the Caspian provinces it is feverish in summer. The winter is therefore best for everything except deer, for which, of course, the rutting season is the time.

THE GUN AT HOME AND ABROAD

Amongst the *felidæ*, tigers are only found in the Caspian provinces. Lions, that were at one time fairly common in the south-west of Persia, can now, it is said, only be found in Luristan. Panthers exist on practically all hill ranges. Bears are found in the Elburz range and also in the western provinces. The only elaphine deer is the maral, found on the northern slopes of the Elburz range, where there are forests of deciduous trees, and the range of the Persian roe deer is probably the same. The Mesopotamian fallow deer is said to be found in the forests of dwarf oak in Luristan. Ibex and urial are found everywhere in Persia where there are high hills remote from centres of population. Persian gazelle are common all over Persia in the *garamsil*, or "hot country," as the plains are called.

As a general rule, it may be taken that the further away from the haunts of men the better the chances of sport. Breech-loading rifles are now plentiful in the country, and though no Persian of the upper classes, who own such weapons, cares for any sport that cannot be indulged in on horseback, they lend their rifles to their servants and others to get them meat. I need not say that no game laws exist and that no Persian shikari out to kill is ever troubled with qualms about sex or season or any such thing.

Some parts of Persia, notably Persian Baluchistan in the east, and most of the frontier provinces on the west, are disturbed, and it would be inadvisable to attempt a shooting trip in those districts. There is no absolute veto against Europeans visiting any part of Persia, but it would be exceedingly difficult to get transport and supplies in disturbed parts, while wandering about without a strong escort would also be very risky. It would always be advisable for anyone contemplating shooting in Persia to ask for assistance and advice from the British Consul posted in the district it is desired to travel in. Their good offices with the local authorities are often essential and would always be useful.

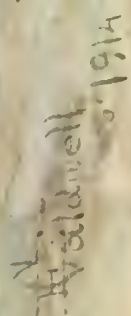
Unless a sportsman has a friend in the country to arrange for his camp equipage, tents, etc., these should be taken with him. Servants can be got in most of the towns where there are consulates, while shikaris should be enlisted locally.

As a very short bibliography for intending sportsmen I would recommend Curzon's well-known but now scarce work, "Persia," Sykes's "Ten Thousand Miles in Persia," and Nelligan's "Hints to Residents and Travellers in Persia." The only volume entirely devoted to sport in Persia is the present writer's "By Mountain, Lake and Plain."

R. L. KENNION.

TIGER (*Felis tigris*)

PLATE XXII.



THE INDIAN EMPIRE

THE PLAINS, HILLS AND JUNGLES

ALTHOUGH the big game of India have been much thinned down of late years, there are still enough left for those who know where to go and how to set about it; moreover the jungles are so dense and so vast in extent that there is no fear of the tiger, at all events, becoming extinct.

The important point to bear in mind is that the conditions under which one shoots in India are quite different from those of most other countries. A sportsman cannot select a certain district, and just hire a caravan and go where he chooses, as can be done in most parts of Africa; for in India nothing can be accomplished without the cordial co-operation of the forest officers and other officials, and without friends to assist one there is very little chance of success.

Of course in a native state, as the guest of some Maharajah, you may take part in a shoot with a number of other sportsmen, where a big bag is made and everything made easy for you; but the real joy of hunting can only be felt when shooting by yourself or with one friend, when you are at liberty to make your own arrangements or "bandobast," to use the comprehensive local word.

One of the difficulties for a visitor is the language. Although it is easy enough to hire an English-speaking servant to translate for you, it is much more satisfactory to acquire a moderate knowledge of Hindustani; for the jungle native is so shy and secretive by nature that you are much more likely to find out what is really in his mind by talking to him yourself than through an interpreter.

As regards seasons, the most deadly time to hunt for the generality of game is in the hot weather, when the jungle grass has died down and the water pools are few and far between; most game, like the tiger, cannot go far from water, but the heat is then very trying, and a tiger skin at this season cannot compare with one killed in the cold weather.

Another disadvantage of hunting at this time is that the jungle is dry and crackly, and it is very difficult to walk noiselessly when after sambur or other deer. After the rains it is much easier to track bison and such

THE GUN AT HOME AND ABROAD

like animals, and one can travel comparatively quietly; but it is rather a feverish period, especially in the jungles of Southern India.

The winter climate is delightful to camp out in, and, strange to say, it seems always safe to sleep out in the open, if so inclined, even in a tiger country, unless there is a man-eater about; whereas in Africa, where there are lions anywhere near, it would be taking considerable risks to do so.

Transport is cheap in India, and one generally travels with large tents and a considerable amount of impedimenta, in fact the whole business is much more luxurious than in most countries.

The climate in the hot weather is very trying, and it is a mistake to stint oneself in the matter of luxuries, as it is very easy to get run down from hard work. As most of the water met with is unsafe to drink, it is advisable to take a good supply of soda, which is made locally and can be procured for about eightpence per dozen; this compares favourably with the price of soda water at the Victoria Falls of the Zambezi, where I had to pay two shillings a bottle for it, but this was Schweppe's and had to be imported.

The game regulations vary in the different provinces and districts, and care should be taken to find out what they are before starting. In the central provinces the "block" system has been adopted, and the sportsman must ask in advance for a particular section if he wants it; but it does not follow that he will be successful in his application, as there may be several others after the same "block." The attempt at game preservation has not always proved satisfactory, as sometimes, as in parts of southern India, the result has been to leave too large a proportion of hinds to stags among sambur, with a consequent deterioration in the quality of the heads.

For all the bigger animals, such as bison, buffalo, and rhino, a large-bore rifle should be taken, and something pretty powerful should be used for tiger and bear, as no one wants to run the chance of having a beater mauled by a beast he has wounded.

Of course, for blackbuck, chinkara and most deer, a small-bore rifle is sufficient, but one of the troubles is that any long range weapon is very dangerous to fire at some of these animals, which frequent cultivated land quite near villages where there are a good many inhabitants. It must be remembered that the importation of the '450 and '303 rifles into India is prohibited. Shooting from the back of an elephant is by no means easy, even when your mount is supposed to be standing still, as



Photo by J

[Mr. P. B. Van der Byl.

HOWDAH ELEPHANTS GOING FORWARD.

PLATE XXIII.

THE INDIAN EMPIRE

elephants are never quite stationary and are always moving a little from side to side, and for this kind of sport a weapon of the "paradox" type is preferable.

When shooting away from the railway line one can sometimes get permission to inhabit the bungalows built for the use of officials travelling on duty; from some of these I have enjoyed excellent sport while living in comfort, as dwelling in a small tent in the hot weather is anything but a joy.

On the regular post-roads there are usually Dak bungalows, where any traveller can stop a night or two for a small payment, but it is seldom that much game is found within reach of them.

It is while staying at Dak bungalows that the traveller makes that intimate and prolonged acquaintance with the *murghi*, or native fowl, seen running about the compound on arrival, and very shortly afterwards appearing on the dinner table. In the hot weather it is very difficult to find something appetizing to eat, and curry is a great blessing, as it is about the only form of food that tastes of anything.

Nearly every year one hears of the death of some man from a tiger or leopard. The cause is nearly always the same, viz. following up a wounded beast into thick covert. As the majority of tigers or leopards are shot from a machan, or the back of an elephant, there is no reason why this should occur; but it seems due to the almost irresistible desire to make sure of the animal. For humanitarian reasons a wounded beast should always be dispatched as soon as possible; but the following up at once is an extremely hazardous proceeding, and old hands at the game are generally able to curb their impatience.

Of course, if you have an elephant, the wounded tiger can be hunted down in much greater safety than can be done on foot. For any dangerous animal a double rifle is much better than a repeater, as if a second shot is required it is wanted pretty quickly. The sportsman should not scruple to buy the best rifle he can afford, as a man's life, and that is sometimes his own, may depend upon the efficiency of the weapon.

Now that the sovereign is current in India, and the exchange fixed at fifteen rupees to the £1, the money question is much simplified for anyone arriving in the country for the first time; a large supply of two- and four-anna pieces must, however, be carried to pay beaters, etc. It is most important that the sportsman should see himself that all payments are duly made to villagers, as if the matter is left to his servants some of the

THE GUN AT HOME AND ABROAD

money is sure to be kept back, and in consequence those who follow him may find difficulty in procuring supplies and beaters.

Before a drive every man employed should be handed a gun wad or ticket, which he must return when receiving payment for the day's work, otherwise every native in the vicinity will turn up in the evening and say he has been taking part in the beat and claim payment for it. Unless some such plan is adopted it is a very difficult matter to determine whether he has been helping or not.

Tents and all the shikar clothes requisite can be got much cheaper in India than at home; sambur leather boots, with rope soles, are excellent for jungle work, in dry weather at all events, and stout gaiters should be worn with them as a protection against snakes. As a good deal of riding may have to be done, breeches of some kind are recommended. A solar topee is a necessity, and a pad down the spine, to button on to the coat, is a useful thing. I personally always take a white umbrella for the sun, though it is supposed to be the mark of a "tenderfoot." A native *chargal*, or skin water bag, keeps your drink cooler by evaporation than any form of water bottle; lime juice and soda makes about the best drink while out hunting, and it is better not to take alcohol before sundown.

The men who take part in big shoots, where everything is managed for them, lose most of the real pleasure of hunting, which can only be appreciated by those who have carefully studied the habits of the animals they are after, and do much of the shikar work themselves. Of course no white man can hope to attain the proficiency of a Gond native tracker, but there is enormous interest in endeavouring to work out the trail and to notice the marks relied upon by the trackers, such as the dryness of the sap where a twig has been bitten off. When the line is lost, one can sometimes pick it up ahead of the tracker by going forward a little to a spot past which you think the animal is most likely to have gone, while the jungle man is puzzling out the trail step by step. Those who have done much of this kind of work can usually guess pretty well which is the most likely route for the animal to have chosen, but care must be taken not to make the trackers' work more difficult.

When there is any chance of seeing game the sportsman should always carry a rifle himself, as many chances are lost by not doing so; if you suddenly come in sight of a beast, stand absolutely still and do not attempt to stoop down quickly.

There is a great fascination in sitting up for an animal at night, over a



Photo by]

[Mr P. B. Van der Byl.

PADDING A TIGER.

PLATE XXIV.

THE INDIAN EMPIRE

kill or a water hole, and listening to the sounds of the jungle; but it entails a considerable amount of physical discomfort, not only from mosquitoes, but owing to the necessity of remaining absolutely still; and it is not a form of sport that one cares to indulge in very often.

The Ceylon game list includes elephant, buffalo, sambur, chital, leopard and sloth bear; but the tiger, strange to say, is not found in the island. The horns of the buffalo and stags run small, and elephant ivory is almost non-existent, so that there is not much to tempt the big game hunter in Ceylon.

In addition to the big game of India, the chief varieties of which are briefly described in the following pages, the country provides the most excellent sport for the shot gun. In the winter months the *jheels*, or marshes, are invaded by countless thousands of duck and snipe, which come down from the far north to avoid the cold weather. Good duck shooting is a sport that never palls; but tropical snipe are much more lethargic than those found in Europe, and in the middle of the day, when the sun is up, they fly poorly and do not offer interesting shots. One of the best localities for wildfowling is in Scind, not far from Karachi, where the Indus approaches the sea, and here big bags are made.

The sand grouse is another bird that affords good sport, and one Christmas week, as the guest of the Maharajah of Bikanir, I had a grand time with them. The guns sit in butts round a lake for the morning and evening flight, as the birds approach to drink, and the sand grouse, as they come in from the desert fly high and fast, and offer shots that will test the skill of the best marksmen. We also secured many duck on the same lake by having them driven to us.

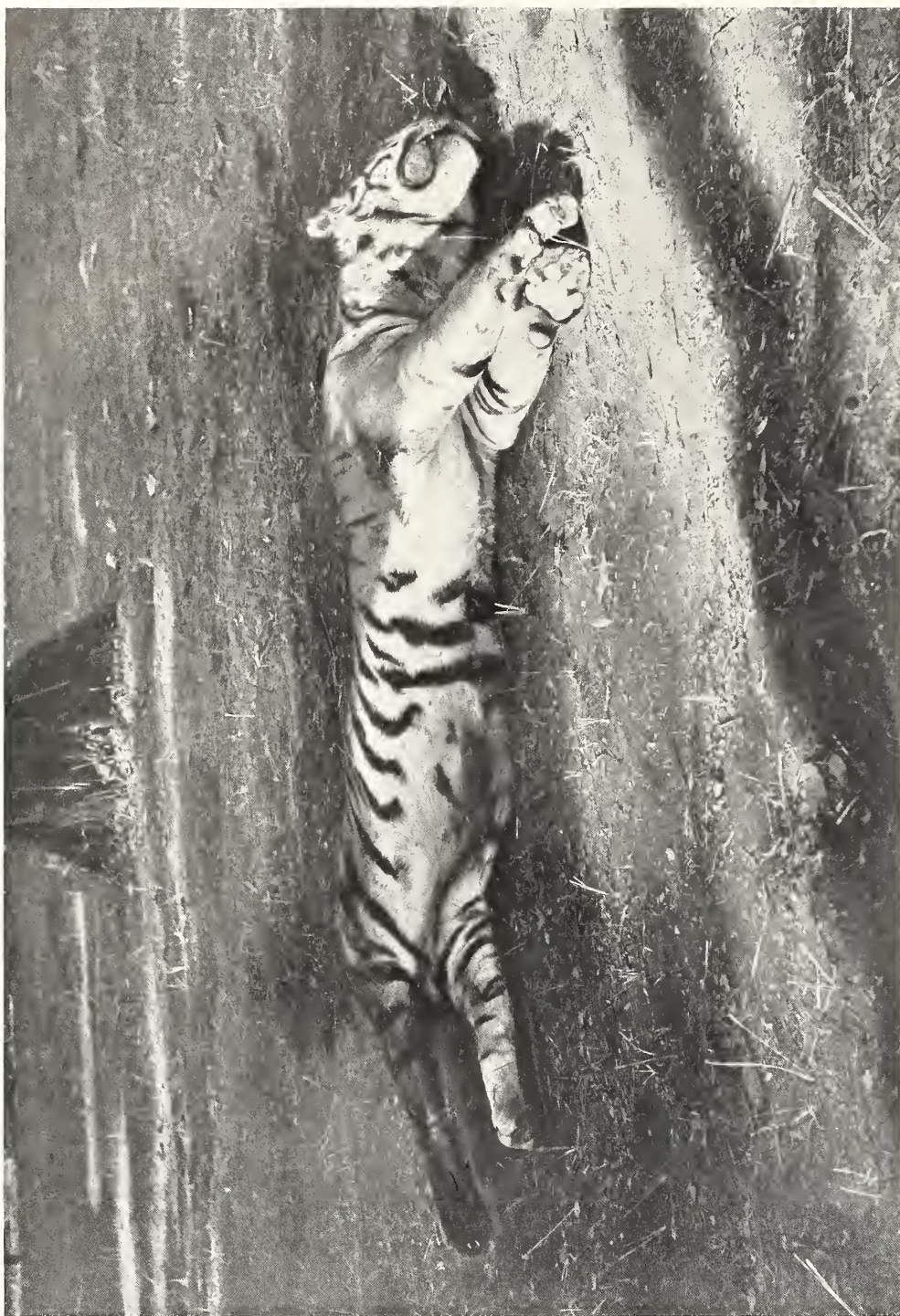
On the foothills of the Himalayas the chikor affords good sport, and the fact that one is generally walking on the side of a steep hill when the birds skim over adds not a little to the difficulty of the shot.

Pheasants of several varieties are found in the mountain forests, but they are difficult to drive owing to the size of the coverts. The peacock has a wide range in India, but can hardly be described as a very sporting bird, and it is as well to remember that the natives sometimes object to their being killed near the villages.

There are also bustard, jungle fowl, partridges, quail and hares to be shot in many places; but it is always difficult to combine shot-gun shooting with the pursuit of big game for fear of disturbing the latter, and it is better to make a separate expedition for the purpose.

THE GUN AT HOME AND ABROAD

Anyone landing at Bombay with the idea of making a shooting trip in India will do well to visit the Natural History Society there, adjoining the offices of Messrs Phipson and Co., where some fine specimens of the beasts he is likely to meet with may be studied, and one may thus avoid killing immature animals not previously seen. It should be the aim of all true sportsmen to secure a few good trophies, and if they can do so without shooting the full number allowed them by law the more credit to them.



From a photo kindly lent by]

[the late Lord Wenlock.

A NEPAUL TIGER.

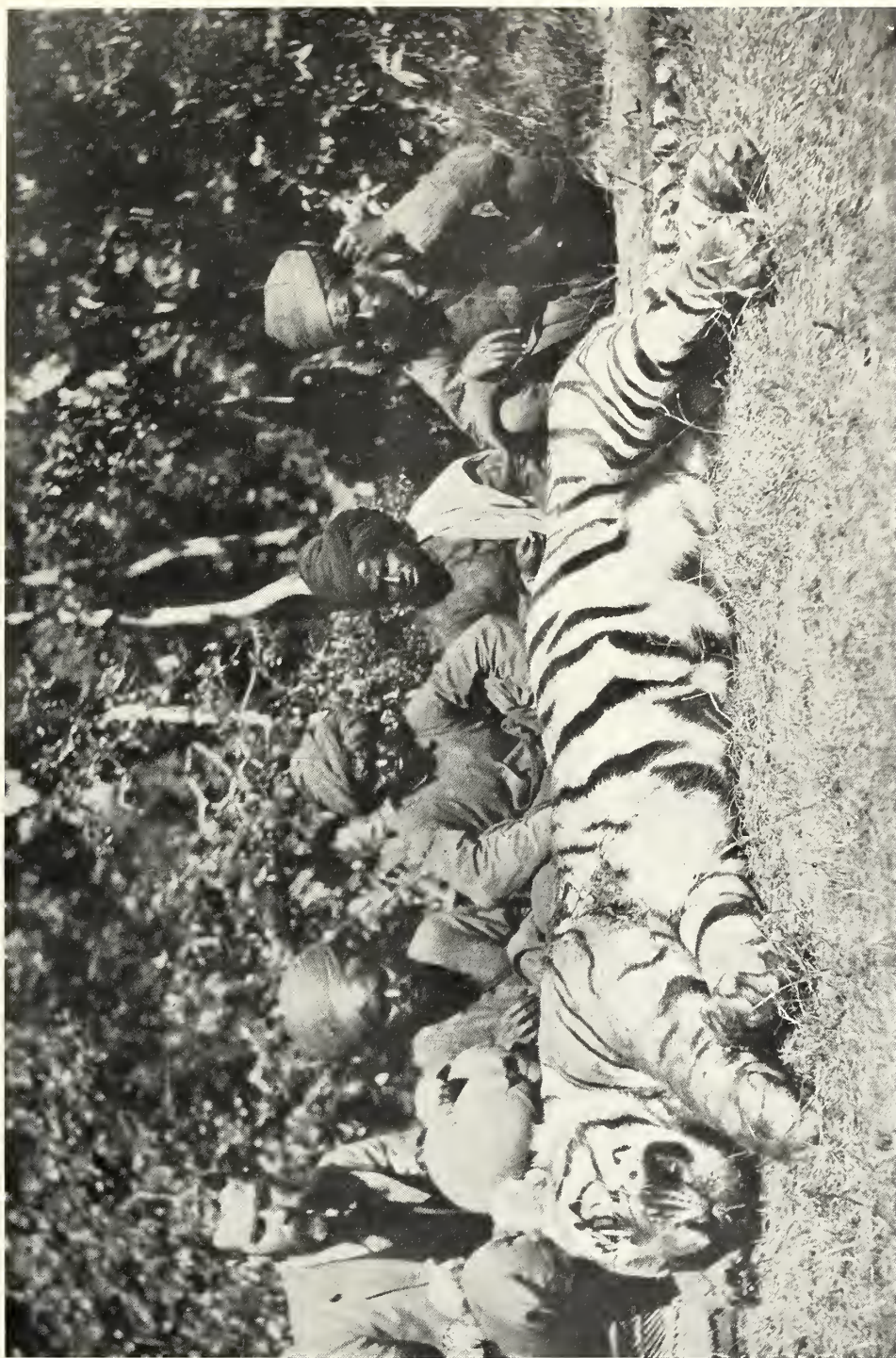


Photo by Mr P. B. Van der Byl

A MIRZAPUR TIGER.

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PLATE XXVI.

THE TIGER

(*FELIS TIGRIS*)

THE three principal methods of tiger shooting in India are, first, by driving with elephants; second, by driving with men as beaters to the sportsman posted in a machan; and thirdly, by sitting up over a kill or drinking place. Nearly all those killed in India are accounted for by one or other of these three methods, and it is surprising how very seldom a tiger is encountered by chance and shot when after other game. This animal is generally known as "Bagh" by the natives.

The first method is that usually practised in the Nepaul Terai and Assam, in places where the grass and reeds are so high that a man could do nothing on foot. It is a costly business and can seldom be indulged in without the assistance of some native prince, for, in addition to the number of pad elephants required for beating, each sportsman wants a howdah elephant for himself; and a steady one, that will stand a charge if necessary, is worth a great deal of money.

I was once privileged to take part in the big annual shoot of the late Maharajah of Cooch Behar, when something like fifty pad elephants were employed to beat, and we lived luxuriously in a perfectly appointed camp. When there was not a good open space for the sportsmen posted at the end of the beat to shoot in, four elephants were made to pass abreast backwards and forwards through the high reeds till an open track was established. It was not always possible to get a clear shot at the tiger, and firing at the moving grass is an uncertain business, as the bullet nearly always goes too high. In this kind of shooting there is comparatively little danger, though occasionally the tiger does manage to spring on the head of an elephant, when it is very difficult to make a safe shot. Should the sportsman be shaken out of the howdah there is quite a fair chance that the maddened elephant may mistake him for the tiger and trample on him; and if you allow your mount to get mauled you are not likely to be invited again, as he loses his nerve and deteriorates in value in consequence.

Elephants are curious beasts, and I knew one that stood without blenching the charge of both a tiger and a rhino on the same day, and on the way home nearly threw me out of the howdah because a small pig ran between

THE GUN AT HOME AND ABROAD

his legs as we were passing through a village. Their intelligence in breaking off boughs at the word of command from the mahout is wonderful, and they will even return a fallen cartridge. Once I lost an orange, which was carefully picked up, but on the way upward it was dropped into the elephant's mouth, and the end of his trunk held up empty, as if the sage beast had been performing a conjuring trick.

The second method—driving with beaters to one or more sportsmen posted in machans—is that generally practised in the Central Provinces.

Young male buffaloes, called *helas*, are tied up as bait for several miles round the permanent camp; these are visited by the shikaris in the morning; and as soon as *khubber*, or news of a kill, arrives, a beat is organized, as the tiger, if undisturbed, usually lies up pretty near the remains, off which he intends to make a second meal. In addition to the main line of beaters a considerable number of men are posted in trees to act as stops, and it is wonderful how slight a noise, if made at the right moment, will turn the tiger in the requisite direction. Men must also be placed in trees behind the machans to mark which way the tiger goes if wounded. Great care must be taken not to fire at the tiger before he gets level with the machan, however tempting the shot, as if wounded he will probably double back and kill some unfortunate beater. The finest tiger I ever secured was in a beat of this nature in the United Provinces, where my host, who, by the way, has the reputation of being the finest driver of tigers in India, was so confident of the skill of the men whom he had trained for several years that he said he felt pretty sure his head shikari would undertake to drive the tiger over a rupee if I placed one on the ground. I told him that I did not require such accurate manipulation as this, but if he would indicate to me roughly which way the tiger would probably come I would do my best to hit it; whereupon he pointed out the further bank of a small nullah about thirty yards distant, and, sure enough, the beast passed within an hour at a slow trot within three yards of the spot prophesied, and this though the piece of jungle they had to drive was about half the size of Hyde Park. On this occasion my bullet struck a little above the heart and passed clean through the beast; the weapon was a black-powder .577 and though the bullet was soft lead the hole was not quite big enough to cause expansion. Though knocked completely over, he recovered himself and galloped about fifty yards, where he halted; the jungle, however, was so thick that although his tail was visible moving from side to side a body shot was impossible. After looking round for several seconds



Photo lent by]

[Col. G. Houldsworth.

INDIAN TROPHIES.

PLATE XXVII.



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[H.H. the Maharajah Gaekwar of Baroda.

TIGER.
Shot in the jungles of Satkashi, April 20, 1907.

THE TIGER

and seeing nothing to charge, the tiger pulled himself together and galloped on. We were both too cautious to follow him up that evening, and one of us spent a sleepless night wondering if the wounded beast would ever be found. In the morning we went out with some tame buffaloes from the village to hunt him down, and found him where he had fallen dead in his tracks some two hundred yards further on. This is one of the few instances I have witnessed of an animal pausing in his death rush.

The third method, sitting up over a kill, is generally adopted when the country is too difficult to drive, either from the scarcity of beaters or the size of the jungle. In this case care must be taken to post oneself fairly early in the afternoon. From the writer's experience of this kind of shooting it is only about once in twenty times that a shot is obtained, but there are occasions when it is the only chance of getting a tiger at all.

When there are several sportsmen out it is the man who gets first blood and not necessarily the one who kills it to whom the tiger belongs; this, however, does not always apply to other big game, for buffalo, bison and rhino, in some parts of India, count to the man who gives the knock-down shot. Tigers are nearly always killed at short range, and the shoulder shot is to be recommended as the most effective. Of course, when beating for a tiger, all other game must be spared, at all events till the first shot is fired. The lucky bones, which are really elementary collar bones, embedded in the shoulder muscles, should be preserved; mounted as safety pins they are appreciated by ladies; care must be taken that the claws and whiskers are not stolen as charms by the natives.

The skull of a tiger may be easily distinguished from that of a lion, by the prolongation of the V-shaped suture over the middle of the nose beyond the parallel ones on each side of it; while in a lion's skull the termination of the three sutures is almost in a line. It is difficult to say which of the two animals is the more dangerous to hunt. The tiger, as a rule, is shot in thick jungle, where the following up of a wounded beast may lead to disaster; while the lion, though generally hunted on foot, is nearly always met with in fairly open country, where, if not disabled by the first shot, he can easily be marked down and finished off.

One occasionally hears of an albino tiger being killed, but the writer has never had the good fortune to see the skin of one.

THE LEOPARD

(*FELIS PARDUS*)

THIS animal is fairly common throughout the jungles of India and Ceylon, and is sometimes spoken of as the panther.

Some authorities say there are two varieties, but if so they are so similar as to make it difficult for the ordinary sportsman to distinguish between them.

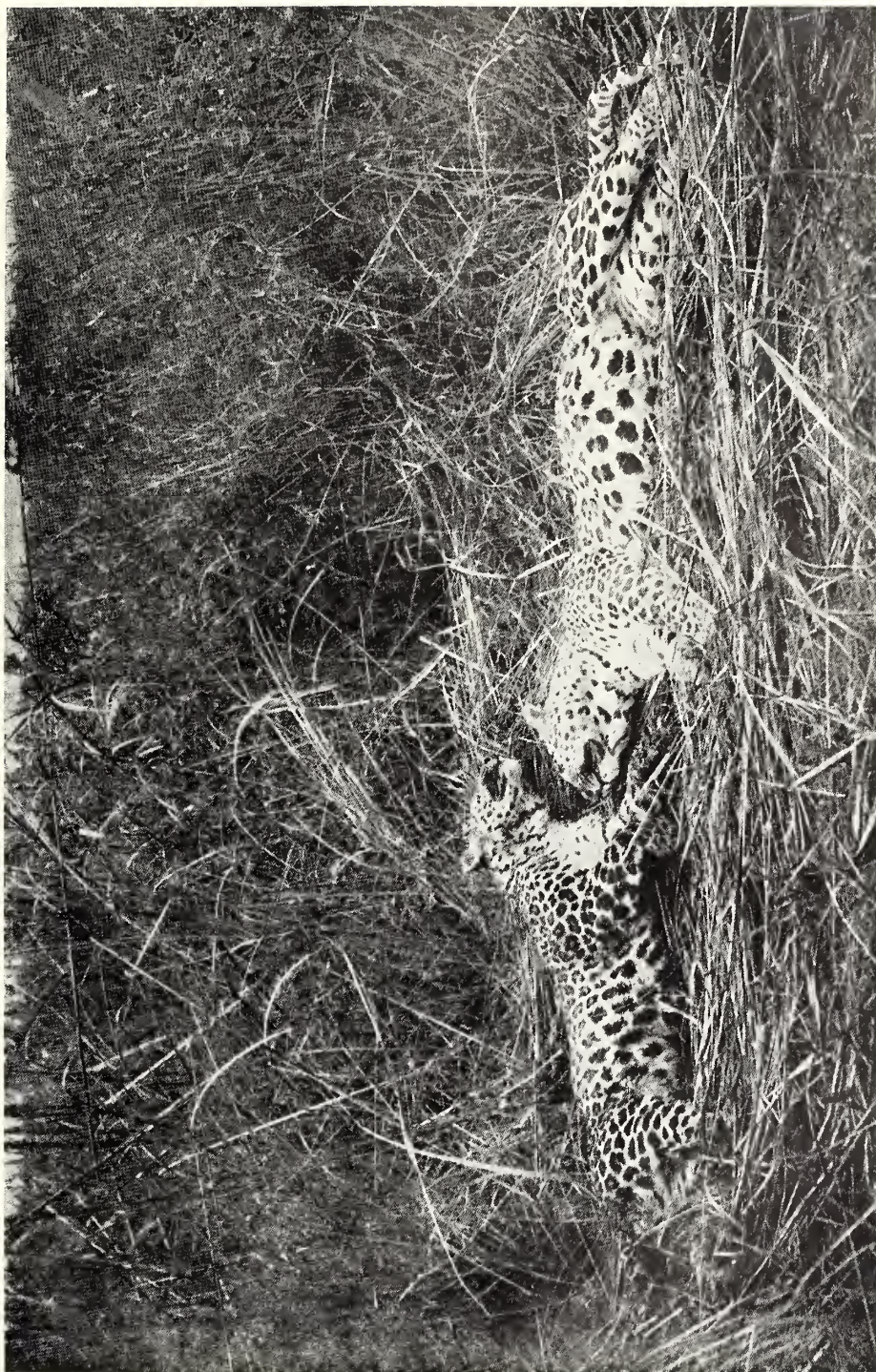
Cases of melanism are not infrequent, and the writer once saw a black specimen killed in Assam, on which the spots were faintly visible in certain lights; this colour seems more common in Mysore and Southern India.

The leopard often takes up his abode near a village, especially if there is hilly or rocky ground about, and does much damage to the inhabitants.

He is a most crafty animal, and is very difficult to drive, as he nearly always escapes from the side of the beat, or lies low and allows the beaters to pass by him. The usual method of shooting is to tether a village goat and sit over it during the late afternoon and evening; in this form of sport there are a good many blanks. Leopards frequently climb trees, and are occasionally spotted lying asleep on some branch, when an easy shot may be obtained. As this is one of the most dangerous animals to follow up when wounded, the greatest care must be taken in the pursuit. Leopards, as well as lions, possess the floating collar bones to which I have alluded in the case of the tiger: these should be kept by the shooter.

When a panther takes to man-eating it does an enormous amount of damage. At the Allahabad Exhibition of 1911 particulars of one in the Almora district were advertised and a large reward offered for its death. It seems hardly credible that this beast can have accounted for the two hundred human victims attributed to it in three years, but it may have been a female whose offspring had been brought up to join in their mother's deadly propensities. A friend of the writer shot a noted man-eating leopard known to have slain thirty-eight human beings, and only got it at last by sitting up over the corpse of one of its victims. This sounds rather a gruesome form of sport, but any means to exterminate one of these pests should be adopted.

The chita, or hunting leopard (*Cynælurus jubatus*), is seldom met with and shot. If captured young these felines are kept and trained by some native prince to hunt blackbuck.



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H. H. the Maharajah of Cooh Behar.

A FINE PAIR OF LEOPARDS.

PLATE XXIX.

THE LION

(*FELIS LEO*)

THE lion is now only found in India in the district of Kathiawar, where it is strictly preserved. It appears to differ but little from the African species, though black-maned specimens are very rare, if they exist at all. There are a few instances recorded of these animals being killed during the last century in the Central Provinces; they may now be regarded as quite extinct in this region. In olden days the lion must have had a much more extended range than now, and the big bags made by the Assyrian kings, as depicted on the bas-reliefs in the British Museum, are enough to make the mouth of the modern hunter water.

THE SLOTH BEAR

(*MELURSUS URSINUS*)

THE sloth bear is by no means uncommon in the jungles of India, and is chiefly remarkable for the length of its claws, which are used to dig up ant-heaps, and for its growth of long black hair, which seems so unnecessary for a beast living in a tropical climate.

It does not hibernate, and shares this peculiarity with the white bear of the Arctic, which seldom, if ever, does so. The sloth bear generally lies up in some cave in a rocky hill by day, whence it sallies forth at night in quest of food. It loves anything sweet to eat; like all bears, it has a keen sense of smell and somewhat indifferent eyesight. Its temperament is uncertain, and it may charge if come upon suddenly. It is greatly feared by the natives, many of whom carry the marks of their encounters with these animals.

This bear is sometimes obtained by beating the jungle, and occasionally evicted from its home by fireworks or other devices; or it may be shot by sitting up over its cave in the early morning and awaiting the return from feeding. In its habits it is an extremely interesting and quaint animal to watch, should an opportunity occur, and it is delightful to see an old mother bear travelling along with her young one clinging to her back.

THE BUFFALO

(*BOS BUBALIS*)

THE buffalo is found in Assam and the Terai country, as far west as Nepaul, also in Eastern Bengal and the eastern districts of the Central Provinces as far south as the Godaveri River. Apparently it does not exist in Southern India, but is met with again in Ceylon, where the heads are smaller, as is generally the case on an island, where in-and-in breeding tends to deterioration.

Scientists say that there are two varieties in India, chiefly distinguished from each other by the shape of the horns; the body resembles that of the African buffalo, but the hair on the front part of the back slopes forward.

A buffalo head makes a magnificent trophy, but a good pair of horns is now unfortunately very rare, and there is little chance of getting a specimen to rival those which may be seen in the Natural History Museum at South Kensington.

The domesticated animal closely resembles the wild one, and has, I fear, been sometimes shot by mistake. The buffalo is essentially an animal of the flat country and loves a swamp; it has not the same hill-climbing propensities as the bison, nor is it so shy a beast. The damage caused to rice crops by these wild bovines is sometimes very considerable.

In the high grass of the Terai they are usually shot from elephants, but in the sal forests of the Central Provinces they may be tracked and killed on foot. They travel far, and tracking generally means a long day's work; but the Gonds are wonderful men on a trail, though the big foot of the buffalo sometimes leaves very little mark on the hard ground.

They are tough beasts and a heavy rifle should be used. When following a trail it is a good plan to have a soft-nosed bullet in the right barrel and a solid in the left; then if come upon suddenly broadside, the expanding bullet may be fired at the shoulder, but if standing endways on the solid one is more likely to prove effective.



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[H. H. the Maharajah Gaekwar of Baroda.

LION. Length about 10 feet.

Shot at Ghatwad in Gir, Amreli District, January 21, 1900.

PLATE XXX.

THE BISON

(*BOS GAURUS*)

THE Indian bison, sometimes called the gaur, is met with in Assam, and as far west as Nepaul, also in Burma, as well as the forest hill-country of the Central Provinces, Mysore and Travancore, where some of the best heads have been obtained.

The horns, which are light in colour, are somewhat flattened in shape, and the animal is remarkable for the high arch of the frontal bone between the horns, the elevation of the dorsal ridge, and the shortness of the tail. The points of the horns are often much broken, or blunted, the legs below the knee are white or nearly so, and the foot is wonderfully small for so huge a beast. The favourite food of the bison is the shoots of the young bamboo. The really old bulls are generally found alone. They are shy animals, and as the country is opened up by roads and railways they retire before the advance of man. Of all the big game of India they offer perhaps the finest sport, and anyone who contemplates hunting them would do well to study Forsyth's excellent book, "The Highlands of Central India." Since his day, alas! these animals have greatly diminished in numbers. The most deadly time to pursue them is at the beginning of the rainy season, when tracking is easy and one can approach quietly over the sodden leaves; on the other hand, transport at this period is more difficult and there is a good chance of getting malarial fever.

One year I stayed on late with a friend in Assam, where we were camped not far from the Bhutan border, and got three good bulls between us in ten days' shooting. The bison used to come down from the hills and feed on a plain, and our method of hunting was to follow up a fresh trail on a pad elephant; in the early morning tracking was not difficult, and their line of march through the wet grass could generally be followed by the mahout without having a man on foot.

One of the finest sights of wild game I have ever witnessed was a herd of bison which we came upon just as dawn was breaking. They were well out in the open. There were three good bulls among them, which left the cows and advanced a little towards the elephants, with their heads up, and I could not help thinking how beautiful they would look in an English park. However, they soon decided that we were dangerous, and deserting

THE GUN AT HOME AND ABROAD

the cows made off by themselves, and after a long hunt we managed to secure two out of the three of them. They are tough beasts to finish off, and I shall never forget how futile were the shots fired at short range into the region of the heart from an old '450 black powder express, as one of them lay sore wounded and unable to rise. If lead bullets are used at all they should be steel-nosed. Another wounded bull started to charge one of the elephants, but changed his mind at the last moment and passed within five yards.

The natives of these parts regard the bison as nearly allied to the cow and therefore sacred. Although not averse to our shooting them, they declined to touch a carcass, and after we had cut off the heads and done the skinning ourselves could hardly be induced to pull up the trophies at the end of a rope on to the back of the pad elephant.

Owing to the continuous rain which now occurred we were unable to get the head skins properly dried, and although we kept them hung over fires inside a shanty built of grass and bamboo, they ultimately rotted and had to be abandoned. I got at the same time a dose of fever which remained in my system for over eighteen months. The difficulty of preserving skins is one of the drawbacks to shooting in India in the rainy season, and the only safe way to secure them at this period is by pickling in a barrel, a somewhat cumbersome process.

GAUR (*Bos gaurus*)

PLATE XXXI.



H. Aldwell
1914

THE INDIAN RHINOCEROS

(*RHINOCEROS UNICORNIS*)

THE great Indian rhino, the species usually pursued by sportsmen, has only one horn, and the skin is laid on, as it were, in plates, like jointed armour, with bosses on the quarters resembling rivets. There are at least two other Asiatic species, which extend from the Sunderbuns of Bengal into Burma and as far as Java and Sumatra. One of these, the *R. sumatrensis*, has two horns; it is smaller in size, but has more hair on the body. The *R. unicornis* inhabits the high grass and reed jungles of Assam and extends westward to Nepaul. The only way to hunt it is with elephants, and though one can occasionally descend and follow up the tunnels made by these huge animals through the reeds on foot, it is seldom that a shot can be got in this way.

The majority of beating elephants are terrified of a rhino, and I have seen the line reformed again and again before the gigantic game could be driven out to the guns in the open. Rhinoceros frequently attack the elephants, and on these occasions seem to use their tusks in preference to the horn, and endeavour to rip up the belly. The horn of *R. unicornis* is not very long, but it is firmly fixed on, and I have never been able to get one to peel off with the skin as one can with the African species.

The rhino is a slow breeding beast and should be well protected by the game laws. Comparatively few sportsmen get the opportunity of hunting this animal, owing to the large *bandobast* required; notwithstanding this fact, the big Indian rhinoceros might easily become extinct unless care is taken.

The natives are willing to give a considerable price for the horn, which they make into spoons or vessels used in their religious observances.

THE ELEPHANT

(*ELEPHAS MAXIMUS*)

ELEPHANTS are found in the wild state in the jungle districts of India, Assam, Burma and Ceylon. These animals are, however, such a valuable asset of transport that they are very seldom shot in localities where it is possible to capture and domesticate them.

The chief points in which the Asiatic differs from the African species are comparative smallness of the ears, structure of the teeth, the flatness of the forehead, and the fact that the animal has only one tip to its trunk instead of two.

Those who have ridden elephants much learn to love them and are not likely to want to shoot many specimens. It is difficult to understand how anyone could have cared to slaughter the number credited to certain sportsmen in Ceylon in the olden days, more especially as the island race hardly ever carries any ivory.

The usual method of capturing wild elephants is by the *keddahs*, a system of driving them into enclosures. In some places, like Bhutan, where the late Maharajah of Cooch Behar had the monopoly, they are noosed with ropes thrown from the backs of tame elephants. This way of catching them provides one of the most exciting forms of sport in the world.

Owing to the conformation of the skull, a deadly frontal shot is easier to make against the Indian than the African variety; still, with a really powerful rifle it is better to fire at the shoulder, as the brain is very small for a beast of this size. According to the writer's experience, an elephant struck near the point of the shoulder, especially from in front, with a nickel-coated or steel-nosed bullet, does not go far and can easily be finished off; while a similar bullet behind the shoulder has not always resulted in the beast being bagged.

Wild elephants at times do much damage to cultivation, and occasionally one turns "rogue," and a reward is offered for his destruction. Once when shooting in Assam our camp was invaded on two consecutive nights by a wild elephant which attacked the tame ones and caused considerable damage. This was a *gunesh*, or single tusker, which has a great advantage in fighting over an opponent with two tusks, and our best howdah elephant



Photo by]

[Mr. P. B. Van der Byl.

AN ASSAM RHINOCEROS.

PLATE XXXII.

THE ELEPHANT

was a sad sight the morning after the combat. A friend and myself made an expedition after the *gunesh*, and on the second or third day got up close to a big bull in the jungle, which we imagined to be the animal. He was standing broadside on and just as we were preparing to fire he turned his head and showed that he possessed both tusks; at once we knew he was not the one we were after, and let him go.

When following elephants in Africa I have often been able to locate their position in thick jungle by the rumbling noise of their stomachs when in process of digestion; but I have not noticed this so much in India, where perhaps the animal's food may be easier to assimilate.

THE SAMBUR

(*CERVUS UNICOLOR*)

THE sambur has a wide range in the forest districts of India, and extends to Burma and Ceylon. The hair of the coat is coarser than that of most of the deer tribe, and the tail is rather long and bushy. The typical head has only three points to each antler, though occasionally there are a few extra ones, and the best specimen I ever secured has three on the top of each horn.

The finest heads generally come from the Central Provinces, but the record, which just exceeds fifty inches, belongs to Colonel Obeidulla Khan of Bhopal; this one, which was shown at the Allahabad Exhibition of 1911, and later in London, is very massive, but unfortunately its want of symmetry detracts from its beauty.

The sambur, though a coarse-looking and somewhat clumsily-built animal, gets over rough and hilly ground with remarkable facility. It is usually shot in drives or by still-hunting in the early morning; it is not an easy beast to drive, and it is rather questionable whether this form of hunting should be permitted, as good heads are becoming scarce, and anyone who gets one of forty inches or over may count himself very lucky.

Limiting the number of stags to each sportsman is not in itself sufficient protection, as care must be taken to see that too large a proportion of hinds is not left, otherwise deterioration of heads is sure to occur.

Sambur do not seem to drop their horns quite as regularly as other species of deer, but are generally supposed to do so early in the hot weather, about the end of March or beginning of April. They spend the day in the thick jungle, and do not go far away from it when they feed at night. A local shikari, who knows their habits well, is often able to get you a second shot, should the first attempt fail. When alarmed on their regular ground these deer usually seem to take the same course, often round the shoulder of a hill, and by running on one can intercept them and get another chance. I knew a man in the Mirzapur district of the United Provinces who was particularly good at this, and with his assistance killed the heaviest stag I have ever seen; I always regret that I had no means of weighing it accurately.

The first sambur I ever shot was in the Central Provinces, under rather unusual circumstances. The stag was marked down by a native on a precipitous promontory, from which there was only the one way of egress; I got to the neck in time and secured him, but it is not often that any jungle beast allows himself to be scored off like that.



THE RECORD SAMBUR.

PLATE XXXIII.

THE SHOU

(*CERVUS AFFINIS*)

THIS fine beast, sometimes called the Sikhim stag, inhabits the neighbourhood of the Chumbi Valley and parts of Bhutan, but is not found in Sikhim itself; it is reported to exist in the valleys on both sides of the Bramaputra River to the east and south-east of Lhasa, but can hardly be said to occur in Indian territory.

It has coarser hair than most deer, greyish in shade, with a light coloured rump patch. The horns bend more forward over the face than in the Kashmir stag; ten seems the usual number of points for a mature animal, but there are sometimes more, though there is little tendency to cup at the tops.

Until more satisfactory relations are established with the Tibetans, there is not much chance of the ordinary sportsman being able to shoot a specimen of this stag, as travelling near the frontier at present is not looked upon favourably by the officials of India.

Wallich's deer, which is probably a race of the above, has its habitat in Nepaul, to the westward of the Shou, and differs from it in having a larger rump patch, and being rather lighter in colour; we have at present a live one in the London Zoo, but until more specimens are available classification is difficult.

THE SWAMP DEER

(*CERVUS DUVAUCELI*)

THIS graceful deer inhabits Assam and the country south of the Himalayas as far west as Kumaon; also the Central Provinces, especially the Mandla district; it is not found in Southern India or Ceylon.

Although the horns sometimes carry many points, the form is unusual, as the bez and trez tines are always absent. These deer are generally called *Barasingh* (or twelve-tined) by the natives, but this name is apt to lead to mistakes, as the same word is applied to the Kashmir stag. In the Terai districts they rejoice in marshy country, but in the Central Provinces, where the ground is much drier, they seem to exist quite happily.

They are said to drop their horns in the hot weather about the same time as the sambur. This may be the case in the Central Provinces, where I saw stags which had apparently finished the rut and left the does by March 20; but in Assam, another year, I saw two stags shot in the velvet on March 7, and their horns would not have been clean for another two or three weeks. This rather leads one to suppose that the season varies in different districts.

The swamp deer is gregarious. Stebbing remarks that, when emerging from the forest to feed, the old stag of the party often goes first, whereas with the more wary chital the reverse is the case.

Stalking or still hunting swamp deer and sambur is a delightful sport during the cold weather in India, and as you never know what other game may be met with, it is as well to always have the heavy rifle handy. In the early dawn or late evening it is a good plan to have the sun at one's back, especially if there is not much covert about; but the most carefully executed stalk is sometimes spoilt by the chattering of a family of monkeys.



SHOU STAG (*Cervus affinis*).

Length on outside curve $52\frac{1}{2}$ inches; Circumference 7 inches; Tip to tip $18\frac{1}{2}$ inches;
Widest inside 38 inches; Points 5 + 5.

District Tibetan Frontier.

In the Collection of Sir Edmund G. Loder, Bt.



KASHMIR BARASINGHA (*Cervus cashmirianus*).

Length on outside curve 47 inches; Circumference $6\frac{3}{4}$ inches; Tip to tip $21\frac{1}{4}$ inches;
Widest inside $36\frac{3}{4}$ inches; Points 5 + 5.

In the Collection of Sir Edmund G. Loder, Bt.

PLATE XXXIV.

THE CHITAL

(*CERVUS AXIS*)

THE chital has a considerable range throughout the forest districts of India, and extends to Ceylon, where, as is to be expected, the horns are smaller.

The body is spotted from birth till old age, and the skins are worth preserving as they make nice floor mats. The antlers are of the regular *Rusa* type and seldom have more than three points on each; they seem to be shed more irregularly than with other species of Indian deer.

Chital run in fairly big herds and require careful stalking. The first I ever shot in the Central Provinces gave an instance of the "shock," or rather the want of it, produced by a bullet from a heavy weapon.

I was carrying a black-powder .577 rifle when we came on a stag standing apparently asleep under a tree. He was broadside on and not thirty yards away when the bullet caught him fair in the middle of the shoulder. As it remained well mushroomed under the skin on the further side, he must have got the full force of it. One would imagine that an unexpected blow like this would have knocked the deer head over heels, but instead of this he remained absolutely steady for a moment, and then gradually sank down dead. I found afterwards he must have been very sick at the time, as he carried the marks of a recent severe mauling by a leopard, which accounted for his apparent apathy.

THE HOG DEER

(*CERVUS PORCINUS*)

THESE little deer are fairly numerous in parts of the Terai country. They extend to Assam and Burma, but stick to the grass plains and do not go up into the hills. They are usually found alone, or two or three together at most. To look at, the hog deer is a sort of pocket edition of the sambur; when on the run, however, he keeps his head down and the rump up. These deer are generally shot from the backs of elephants, when the party is on the way home at the end of the day, and the order is given to fire at anything that gets up; but they present a small mark and are by no means easy to hit when moving.

They may also be stalked in the early morning or late evening, when feeding near the edge of the forest.

THE MUNTJAC, OR BARKING DEER

(*CERVULUS MUNTJAC*)

THIS deer is found in India up to the foothills of the Himalayas, also in Burma and Ceylon. It is sometimes spoken of as the Karkar, or ribbed-faced deer, the latter name being derived from the continuation of the hairy pedicles on which the short horns stand; the bucks have two tusks in the upper jaw, somewhat like those of the musk deer of Kashmir, but not so long and slender.

Muntjacs have an annoying habit, when alarmed, of running off a little way and then stopping and barking like a dog, and thus disturbing the whole jungle. They are not very interesting to hunt, and their heads, when secured, cannot be regarded as much of a trophy; nevertheless, they have the recommendation of being good to eat.



Photo by Mr. P. B. Van der Byl.]

BUFFALO (*Cooch Behar*).
[Reproduced by kind permission of Messrs Horace Marshall and Son.

THE BLACKBUCK

(*ANTILOPE CERVICAPRA*)

THE Blackbuck is surely one of the most beautiful beasts that walks this earth, and if he were only rare plenty of us would travel thousands of miles to shoot a single specimen. As it is he cannot be described as a very interesting animal to hunt; moreover, he is seen so often from the road or railway that one gets in the habit of looking upon him more as an adjunct to the landscape than as a game animal. Blackbuck are found practically all over India, but not in Burma or Ceylon. They are lovers of the plains and do not take to the hills. Most of the good heads come from Jeypore and the Bikanir Desert, while they run smaller in the Central Provinces and Southern India.

The coat of this antelope certainly varies somewhat with the seasons; the mature bucks are generally black, but occasionally one is seen in the same herd of a lighter or brownish shade. No man seems yet to have solved this problem of coloration, but it probably has something to do with the period when the antelope ceases to be the master buck of the herd. Very much the same variation of colour may be observed among the herds of the *Cobus leucotis*, or white-eared kob, of the Upper Nile, the explanation of which is still lacking.

In open country a careful stalk after blackbuck is often useless; it is then more effective to stroll along casually in full view, gradually edging nearer till one can throw oneself down and take the shot. In the preserves of the Maharajah of Bikanir special bullock carts are used, and when within range the sportsman jumps out and lies down, without stopping the cart, on which the antelope keep their attention fixed. Blackbuck are beautiful movers and sometimes execute the most wonderful bounds in the air. As they are often found on cultivated ground, with many natives in the vicinity, the greatest care must be taken in using a long-range rifle.

The females of this antelope are light fawn in colour and hornless.

THE CHINKARA

(*GAZELLA BENNETTI*)

THIS gazelle is sometimes called the "Ravine deer," but the term is hardly ever used nowadays; it is found more or less all over India in suitable localities, but is most plentiful in the Punjab and in Bikanir. The Chinkara may often be seen in the same localities as the blackbuck, but as a rule it prefers more broken ground, and does not show the same partiality for cultivation. Though not very wild, these are restless little beasts and keep continually twitching their tails and moving on, just when you think you are going to get a shot; they are quite good fun to stalk, but may lead you some distance before you ultimately get a chance of firing. The best bucks are generally found alone. Though the females carry small horns, they are not worth shooting as trophies.

THE FOUR-HORNED ANTELOPE

(*TETRACEROS QUADRICORNIS*)

THIS little antelope, found in Peninsular India south of the Himalayas, inhabits hilly districts covered with brush and grass jungles. It is not met with in Ceylon or Burma. Except for the four horns it is very similar to the duikers of Africa; it is not gregarious and is usually found in pairs, never very far from water. It is of retiring habits, and does not molest the crops. It lies very close in its form in the grass, and one may sometimes kick them up almost like rabbits. When once started their movements are very similar to those of the muntjac. Comparatively few are shot, and they are among those lesser beasts of India which are occasionally bagged by the sportsman when looking for other game. No one, of course, is likely to make an expedition especially to shoot them. The females are hornless, and the bucks do not always have all four horns completely developed, the front pair being sometimes represented merely by knobs.



Photo by]

[Mr P. B. Van der Byl.

BLACKBUCK.

PLATE XXXVI.

THE NILGAI

(*BOSELAPHUS TRAGOCAMELUS*)

THE blue bull, as it is also called, is found over a considerable portion of India, but not in the extreme south. The old males are generally alone, though the cows and calves are sometimes seen in herds of ten or a dozen.

With his high withers and low hindquarters, this is an ungainly beast to look at, and it seems a sad pity that an animal of his size should not carry a better trophy.

Although they do considerable damage to cultivation, the Hindus sometimes object to these animals being shot, as they consider them belonging to the cow tribe, which they hold sacred. The nilgai is not a very sporting beast, and few men who have killed one good specimen would ever care to shoot another; but if he can be met with in fairly open country and pursued with horse and spear, he gives quite a good run.

Even the most harmless of beasts may turn on the hunter when mortally wounded, and I once met a man who told me how he had just escaped what he described as the most ignominious of all deaths, from a blue bull which he approached, thinking it was dead, and which rose and went for him.

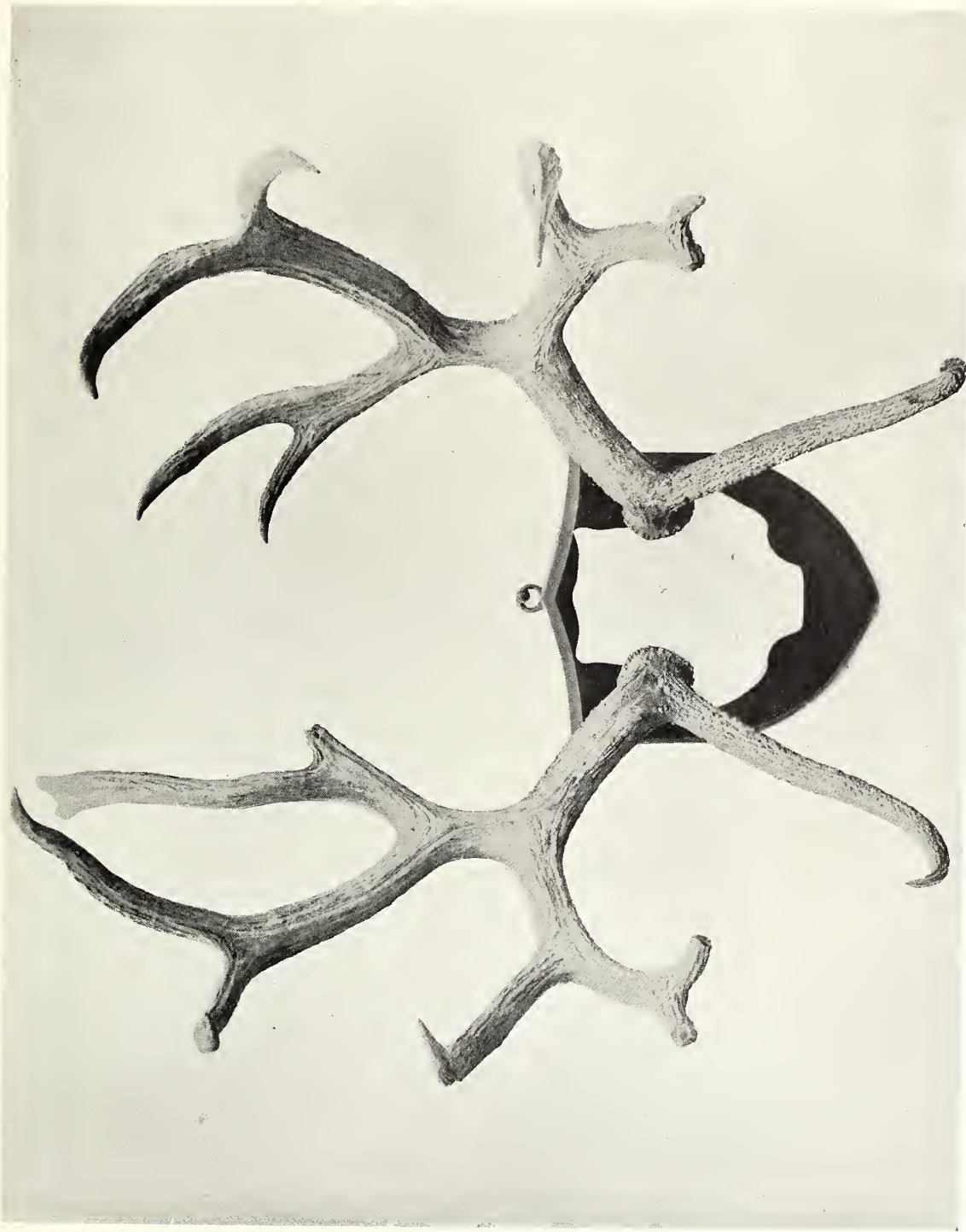
THE URIAL

(*OVIS VIGNEI PUNJABENSIS*)

THE urial of the Salt Range is a very similar beast to the Sharpoo of Ladak and Astor, though it lives in a warmer climate and at a lower elevation. There are now, alas! few good heads to be got in the Salt Range, which is a delightful country to hunt in during the cold weather, but too easily accessible. The finest specimens of this sheep now come from Waziristan.

As regards the beard of the urial, Mr R. Lydekker has made some interesting comments in "Country Life," from which it appears that that appendage may be a matter merely of age and not of season, as specimens with and without beards have been shot out of the same herd.

One year in the Salt Range I secured a good ram in the last ten minutes of daylight on my final day. The circumstances of the hunt were somewhat unusual, as the ram was sighted with a herd of ewes too late in the day to make a stalk with due regard to the wind. The head shikari's suggestion to attempt to move them towards me with his two assistants seemed the only feasible plan. Their mode of procedure was somewhat curious, as they started off in full view, singing as they went, and pretending to pick up firewood as they moved along. The urial, being so used to seeing villagers act in this manner, took hardly any notice and allowed the men to get right round them and drive them in my direction. They came along quite slowly, pausing every now and then to snatch a mouthful of grass, till they passed within a hundred yards and offered a fatal shot.



SCHOMBURGK'S DEER (*Cervus schomburgki*).

Length on outside curve $32\frac{1}{2}$ inches: Circumference $5\frac{1}{8}$ inches: Points 12 + 11.

In the possession of Sir Edmund G. Loder, Bt.

PLATE XXXVII.

THE NILGIRI IBEX

(*HEMITRAGUS HYLOCRIUS*)

THIS animal is nearly allied to the Himalayan Tahr, but living in a warmer climate does not possess the fine neck ruff of hair of that species. It can hardly be described as a true goat, as it has no beard, but there is a slight stiff mane along the back of the neck. The old males have a light saddle mark like the Sardinian mouflon, and the females carry horns. This species is found in the Nilgiri and Anamalai Hills of Southern India, where it lives at an elevation of 3,000 to 5,000 feet. It seems curious that its habitat should be so far removed from its Himalayan relative, as there are several ranges to the north of its present home which appear just as suitable for its requirements. The Nilgiri ibex sticks to the cliffs and does not make as much use of the forests as the Himalayan tahr. As a shooting permit only entitles the holder to one ibex, care must be taken not to make a mistake; and as the mountains are not very high there is sometimes difficulty in getting above the animals for a stalk.

The best time to hunt them is from the middle of September till the middle of October and from April 15 till May 15.

THE TAKIN

(*BUDORCAS TAXICOLOR*)

THE takin inhabits the Mishmi Hills on the northern frontier of Assam and Burma, and a variety of it exists in Kansu and Szechuan, Western China. It is a clumsily built animal; both sexes carry horns, somewhat similar to those of the African wildebeest; the female's resemble those of the male in shape, but are smaller. The takin lives at a considerable altitude, though its build is unusual for a mountain-climbing animal. It is very difficult at present to get permission to penetrate to its habitat, so that most of us will have to content ourselves with watching the captive example to be seen in the London Zoological Gardens.

BURMA

BURMA is a delightful country to travel in, and there is a fair quantity of game for the hunter; but the forests are so dense and so vast in extent that to achieve success not only a good deal of hard work is required, but a certain amount of luck as well. There are, in fact, many men who have lived there for years who have never set eyes on a tiger, though these carnivora are by no means rare. Besides the natural difficulties of the country, the casual disposition of the natives and their aversion to anything in the nature of hard work, renders any attempt to make a regular and well-organized beat by no means easy. However, there are two beasts well worth hunting which are not found in India, and only exist in Burma and beyond; these are the tsaine and the brow-antlered deer, and both of these are better pursued with a small retinue and an absence of beaters. Schomburgk's deer, which is allied to the swamp deer of India, only exists in Northern Siam, and is not found in Burma.

THE TSAINE

(*BOS SONDAICUS*)

THIS fine bovine is found in Burma and extends to Malaysia, where it is sometimes called the bantin. The tsaine differs from the Indian bison in several respects. The dorsal ridge is not so pronounced, and the horns are rounder. Very remarkable is the plate of hard horny skin, between the bases of the horns, where the Indian bison has a thick growth of hair. The old bulls are dark in colour, with a white rump patch. The habits of the animal are much the same as those of the bison, but they are not so fond of hill climbing. They may be found on the plains, when the young grass is sprouting after a forest fire, and can then be tracked up and shot in the same manner as bison. Unfortunately they are not numerous anywhere.



TSAINÉ.

Length on outside curve $27\frac{3}{4}$ inches: Circumference $14\frac{3}{4}$ inches: Tip to tip $19\frac{1}{2}$ inches.
Widest inside $30\frac{1}{2}$ inches: Widest outside 35 inches.

Shot in Burma by Capt. J. M. Stewart.

PLATE XXXVIII.

THE BROW-ANTLERED DEER

(*CERVUS ELDI*)

LOCALLY known as the *thamin*, this curious deer is fairly common in parts of both Upper and Lower Burma. The antlers are remarkable for the prolongation of the brow tine, which continues in the same curve as the beam; they have an indefinite number of short points along the top curve and usually a few snags along the inside curve of the brow tine.

In Manipur, where the ground is much more swampy, there is a race of *thamin* with hard skin instead of hair under the fetlocks.

When travelling in Burma one is often able to enjoy the hospitality of the monks, and one year in Upper Burma the writer and a friend occupied for some days the guest house of a Buddhist Monastery. Knowing their aversion to the taking of life, we were careful to ask the Ponge, or chief priest, if he minded our shooting in his district, and were pleased to find that he did not object to our doing so. However, during our stay, we had a curious example of the lengths to which the people will go in support of their own tenets. A four-foot cobra being found in our servants' kitchen, the chief priest dashed out of his chamber with a special implement, evidently kept for the purpose, consisting of a stick with a loop at the end, and caught it alive; and when I asked him what he was going to do, said he intended to liberate it in the jungle. We begged him to take it a long way off before releasing it.

The *thamin* in this district were found in thick bush country, and we hunted them from native bullock carts, jumping off for the shot, a not very sporting way of doing it, I fear. I must explain that during our short stay we could not induce the local shikari to adopt other methods, though I feel sure that the deer could have been stalked on foot perfectly well.

The natives have a firm belief in Nats, or spirits of the woods, and once when a stalk failed my shikari went through a curious ceremony to invoke their aid. Borrowing my rifle he placed it against a tree, and then carefully rolled up an offering of betel nut in a leaf, stuck it in the bark of the tree, and prayed most earnestly before it for several minutes. His petitions were effective, for the same morning I not only got a good stag myself, but found a dead one which my friend had wounded the previous evening.

KASHMIR AND LADAK

NO mountain country in the world possesses the variety of game that is to be found in Kashmir and the neighbouring states; and the excellent game laws and sanctuaries introduced some years ago should preserve all the species in fair numbers, if not in abundance, for future generations. At the same time the sportsman must not expect to find the game as thick in a mountain country as it is in Africa, and those who are not content unless they can bring home a cartload of heads had better confine themselves to the latter country.

Some of the animals in Kashmir, such as the barasingh, have increased of late years, and the only species apparently in need of still further protection are the *Ovis hodgsoni* and the *Ovis vignei*, or sharpoo, of Ladak; for these more stringent regulations have been made this year (1914). Perhaps the goa or Tibetan gazelle, which has such a small range, may have to be still further protected before long.

The Vale of Kashmir is one of the most beautiful spots in the world, and although the prices of everything have gone up of late years it is still probably about the cheapest country to travel and hunt in. Those fortunate ones who enter the valley at the first burst of spring will surely decide that life can have little to offer more beautiful than this; and should the mountains that encircle them not appear as high as expected, they must remember that they are already nearly 6,000 feet above sea level, as they approach Srinagar, the capital. At this season the grass lawns running down to the water's edge and the magnificent chenar trees offer ideal spots for pitching a camp; but those who hurry over the passes to reach distant shooting-grounds will leave all this greenery and cultivation behind them, and will have to content themselves with the rugged beauty of a desolate mountain region.

One of the advantages of the country is that every man has an equal chance, as, with the exception of a few nullahs or valleys retained by the Maharajah for his guests, and the game sanctuaries, the sportsman can wander almost anywhere he wishes. Of course, now that the system of dividing up the Ammon and Sharpoo ground in Ladak into blocks has been introduced, and the number of guns allowed into Ladak each season limited, one must apply early if desirous of hunting in that part of the country.



Photo by]

A THAMIN STAG.

[Mr P. B. Van der Byl.

PLATE XXXIX.

KASHMIR AND LADAK

Those intending to try Kashmir should write some time in advance for the most recent copy of the game regulations, which may be obtained from the Game Warden, Game Preservation Department, Srinagar, Kashmir, as nearly every season it is found necessary to make some changes in the laws.

The visitor need take nothing into the country with him except his rifle, ammunition and personal clothes, as all the necessities of life can be procured in Srinagar, and there is a tourist agency there, where tents, furniture, etc., may be hired for the trip at a very moderate cost. Quite good shikar clothes can be made in Srinagar in a day or two, of the native cloth called *puttoo*, which is very suitable for the purpose; but well-nailed boots, with a supply of dubbin to keep them soft, should be taken.

For a single sportsman, one man as cook and general servant should suffice, and it is better to engage him in Rawal Pindi than to chance finding one in Srinagar. On engagement he is sure to demand a sum of money for warm clothes, which he does not generally devote to that purpose unless made to do so, and this is one of the impositions that the traveller in the East has to put up with.

The visitor will have no difficulty in finding a native shikari to accompany him, in fact they are more numerous than the game. The majority of them are fairly good, and some are excellent; but to be quite sure that they are genuine it would be as well to consult some local resident before definitely engaging one, as the *chits* or characters they produce may have been purchased in the bazaar.

In Kashmir one can always get hold of a man who knows the game, and it is a great comfort not to have to break in a wild native and make him understand that good heads and not young bucks and does are what the sportsman wants to kill; with a good man, also, one is not put off the shot by the tugging of the coat-sleeve and the muttered "Shoot! shoot!" of the untrained native hunter.

Most of the shikaris are fairly proficient in the use of the telescope, and will often restrain you when on the point of firing a long or risky shot on the plea that you will get a better chance another day. As a man the Kashmiri often leaves a good deal to be desired, but taken all round as a hunter I have seldom met with better.

Of course, the Ladaki, or native of Astor and Gilgit, is a better man in his own country, and has the further merit of possessing less guile; but a really good Kashmiri shikari will save the visiting sportsman a vast amount of

THE GUN AT HOME AND ABROAD

trouble in arranging transport and porters for the next march, and generally in making the "bandobast," as the arrangements for an expedition are called. In Kashmir and the neighbouring states porters are only hired for one march, usually twelve to fifteen miles, after which they return to their own village and a fresh lot have to be procured for the next day. It is surprising what bad ground these men can get over with 56 lb. or more on their backs; their legal pay for this amount of work is only the modest sum of fourpence, out of which they have to feed themselves, during the march to and from their own village. Of course, when crossing a long pass like the Zogila the same coolies have to be kept for several days, in which case special arrangements have to be made and very much higher rates paid, more particularly early in the season when the deep snow makes the carrying of a load very severe labour indeed. Later on in the summer pony transport can be got on the road to Leh, and now that rest-houses have been built on the way it is a much easier journey than it used to be.

As regards the question as to which is the best rifle for hill shooting, every man has his own ideas; but it must be remembered that the '303 rifle cannot be imported into India or Kashmir, and it is well always to have two long-range rifles, in case of accidents, such as breaking a stock or a foresight, which may happen at any time. The long range, high velocity repeaters, such as the Mannlicher and the Mauser, have very much facilitated the killing of game; but they have rather spoilt stalking as a fine art, and have I fear proved an incentive to firing long and unsportsman-like shots. In the old black powder days one of the chief attractions of stalking was in making the attempt to approach as near as possible to the animal without being detected; whereas now we frequently kill a beast right across a narrow valley with very little genuine stalking at all.

One of the great charms of Kashmir is that sport with the gun or rod may be indulged in practically the whole year round. Throughout the summer the mountain game may be pursued, and the fine barasingh stag during the autumn, while in the winter and early spring most excellent duck and fair snipe shooting is to be got; in addition to which the *chikor*, or hill-part-ridge, if not numerous, still has the attraction of offering about the most sporting shot of any bird that flies. Now that trout have been introduced with success into several of the streams of the country there is a further inducement to prolong the visit.

Those to whom the pursuit of the mountain game in Ladak and Baltistan



Photo by]

KASHMIR SHIKARI, showing grass shoe.

[Mr. P. B. Van der Byl

PLATE XL.

KASHMIR AND LADAK

is too severe a form of sport can spend a delightful time without leaving the Vale of Kashmir, living on a houseboat as comfortable as those on the Thames; and they can get a fair chance at bear and stag, without going very far afield.

In the old days there used to be a great rush for the favourite nullahs as soon as the season opened, chiefly among the soldiers who came up on leave from India; but this has been a good deal lessened of late years by limiting the number of sportsmen who may enter Ladak and Changchenmo, both first and second leave. Now that the country of the *Ovis hodgsoni* and sharpoo has been divided up into blocks for their further protection, if the sportsman has secured one of these, by an early application to the Game Warden, he knows that that particular block is reserved for him alone, and consequently he need not hurry unduly on the road.

The Markhor nullahs in the Kajrag range are allotted in this manner by the Game Preservation Department, and they are easy of access; but few good heads have been obtained there of late years.

The racing for favourite nullahs is an unsatisfactory business, as, in addition to the hard work and double marching involved, sometimes one man gets ahead of another in the middle of the night and a good deal of ill-feeling results. To establish a claim to an unreserved nullah one must actually be camped in it oneself, and it is not sufficient to have a tent sent on and pitched in advance.

As in all mountain countries, two men cannot hunt satisfactorily from the same camp, and should two friends wish to visit Kashmir together they must make up their minds to separate when approaching the shooting ground; of course, if they can secure neighbouring nullahs they can arrange to meet from time to time and possibly exchange their hunting grounds.

Those who wish to penetrate to the Pamirs in quest of *Ovis poli* will have to procure special permits, which are occasionally granted to travel via Gilgit; but so few heads of decent dimensions have been secured of recent years in the Tugdumbash Pamir that it really looks as if all the big ones had died off, either from rinderpest or some kindred complaint; and unless permission could be got to hunt on the Russian side, which is almost impossible at present, the journey is hardly worth making. But one may take that road to the magnificent hunting grounds of the Tian Shan and perhaps see a good head on the way.

Mountain shooting should only be attempted by those in the best of

THE GUN AT HOME AND ABROAD

health, as it is very hard work indeed, and, coming up to Kashmir from the heat of the Indian plains, one should get into training gradually and not attempt too long marches at first or evil results may follow.

Of course, when hunting, a very early morning start has to be made, as is always the case in mountain shooting. It is most important to spy the animals before they retire to their lying-up places for the day, otherwise you may fail to find them at all, as they frequently repose among boulders or in some hollow where they are quite invisible from your spying-place. At first it is difficult to face breakfast in the middle of the night; but after a short time one gets accustomed to it, and I am sure it is a mistake to start a long climb on a cup of tea only. It is dreary work stumbling up hill in the dark, and it is a good plan to take an extra man with a lantern, who can return to camp as daylight appears; and it may be useful to have him back to meet you in the evening should you be late in returning, as going down a steep hill when very tired, without seeing where the feet should be placed, takes it more out of one than going up, and a sprained ankle may stop shooting for some time, if it does not spoil the trip altogether. When there is sufficient moon to pick one's way with ease, a fairylike scene presents itself as we gradually ascend, the world seems all marble and silver, and as the first flush of dawn touches the snow peaks, what a good thing it is to be alive.

The usual method of entering Kashmir is to drive up to Srinagar from Rawal Pindi railway station in a tonga. This takes about three days, and the horses are changed every few miles; but in the early spring the road over the Murree Hill may be blocked with snow, in which case a march or two must be done on foot, with coolies to carry the baggage; a heavy rainfall may cause a break in the road at any time. There are comfortable rest houses to stop in on the road, and the details of the journey and the various distances can all be found in Colonel Ward's "Guide to Kashmir and Ladak." But the shooting information in that book is now somewhat out of date, and if a new and revised edition could be published it would be a great boon to travellers.

When travelling in India or Kashmir every one takes his own bedding, done up in a roll, as it will be required in the train and in dak bungalows, where bedsteads are provided, but no blankets or pillows. The best form is probably a Jaeger sleeping bag, and a fur bag to go outside this again is a great comfort in the mountains, and is warmer than any number of separate blankets.

MARKHOR (*Capra megaceros*)

PLATE XLI.



W. S. Woodwell
1914

KASHMIR AND LADAK

Many books have been written on Kashmir. Probably the best general description of the country and its inhabitants is that of Sir Francis Young-husband, and the beautiful illustrations of Major Molyneux that accompany it give one an excellent idea of what the scenery is like. For an account of the shooting capabilities of the country, "Sport in the Highlands of Kashmir," by N. Z. Darrah, should be consulted; in it the author describes how in one season he secured specimens of nearly every sort of game obtainable. The distances he covered between the habitat of one species and another involved a terrible amount of marching, and nowadays it would be almost impossible to get all these varieties in one year owing to the game law restrictions.

The long marches to reach some of the distant shooting grounds are very wearisome, and the local pony that can sometimes be procured is usually so poor a beast that the sportsman will do better to trust to his own legs.

Early in the season a good deal of trouble may be met with on the Zogila Pass, which is on the road to Baltistan and Ladak; this pass, though under 12,000 feet, is much feared by the natives owing to the quantity of snow and frequent avalanches which occur in the spring. When a snow pass has to be traversed the time of march should be so arranged that the deepest snow may be crossed before the sun rises, otherwise the sinking in at every step makes the passage most laborious. It must be remembered that 56 lb. is the maximum weight for a coolie to carry, and if the going is very heavy, the less weight the better the progress that will be made; sometimes two men can carry one load suspended on a stick between them, but on bad ground this is not a good plan.

In order to prevent any injustice to the coolies, I generally take a spring balance which weighs up to 56 lb. and can be easily carried in the pocket.

The Himalayan porter carries his load on his back, with the assistance of ropes or straps, sometimes passed over the forehead, unlike the African, who prefers to carry his on the top of the head.

The Burzil Pass into Astor is sometimes very dangerous. A few years ago two sportsmen lost their coolies and baggage there in an avalanche, escaping themselves by a miracle. The dak runners who carry the Gilgit mail have a very bad time here in the winter, if caught in a blizzard between the refuge huts.

Considering the number of inexperienced men who go shooting in Kashmir every year, it is astonishing how few fatal accidents there have

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been from falls. The only case I can call to mind, which occurred while actually shooting, is that of Johnson, who lost his life near Boonji, in Astor, by slipping in his hurry to get down to a beast he had wounded, and he was no tyro at the sport. It was in attempting the ascent of that mighty mountain, Nanga Parbat, which towers up 26,600 feet, that A. F. Mummery, one of the best Alpine climbers we have ever had, was lost in 1895. The exact manner of his death will always remain a mystery, but the assumption is that he was carried away by an avalanche, or killed by a fall of rock. When one reads of the number of deaths that occur regularly every year in the Alps, the paucity of accidents in the Himalayas is all the more surprising. However, the hunter is not likely to take quite as many risks as the alpine climber; yet it must be remembered that there are many awkward places to be traversed when after mountain game, and it is often much easier to get up a place than to get down it, when one cannot see exactly where to put the feet.

The greatest care should be taken in crossing wet grass slopes, especially when covered with melting snow, as they frequently end in a precipice, and for these the Alpine boot with spikes in the heel gives more security than any other form of footgear. Many men adopt the native grass shoe, which is worn over a cloth sock with the big toe divided; these have the merit of comparative noiselessness and keep the toes warm when crossing a snow pass, but are apt to cause sore feet to those unaccustomed to wearing them.

As the cold at high altitudes is always considerable, a good supply of warm underclothing should be taken, and a blanket coat is a great comfort to put on in the evenings; in Ladak the wind is most penetrating, and a leather lining is about the only thing that will keep it out. The heat by day is sometimes intense, especially in the gorges of the Upper Indus, where khaki drill will be wanted; also a solar topee, which should be of felt and not a pith one, as the former stands rough usage much the better. For wearing in and around camp a pair of "gum" boots as high as the knee are useful, as nothing else will keep one's feet dry in wet snow.

When crossing a high pass I always wear a motor mask, with dark glasses let into it, as the glare from the snow blisters the skin on the cheeks and tips of the ears, and may cause snow blindness. With such a variety of climate, a considerable amount of clothes must be taken, but as transport is cheap it is a mistake to stint oneself in this respect.

In order to avoid dressing in the middle of the night when shooting, it

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is a good plan to go to bed in the clothes you are going to wear the next day, with the exception of the boots, so as to be able at any rate to breakfast and start warm; after you have once started, the labour of climbing the hill may be relied on to maintain the temperature.

Those who do not wish to devote all their time to shooting can spend a delightful month or two idling in the valley, either on a houseboat or in a luxurious camp pitched near the water's edge. This land of Lalla Rookh produces excellent fruit—pears, apples and walnuts—in abundance, so that one can do oneself well while idling. Grapes have been introduced and wine manufactured, but so far this seems a doubtful success. The native of the country is as a rule a poor creature, his chief characteristics being cowardice and an inability to tell the truth, and he does not much appreciate being made into a soldier.

During midsummer the heat in the valley is considerable, and mosquitoes abound, so that the majority of the residents retire to the hill station of Gulmerg, where polo, golf and other sports may be indulged in; or if disinclined for so much society, a camp is made in one of the upland valleys where the simple life may be led.

There are many interesting spots in Kashmir for the traveller to visit without going far away from Srinagar. The ruins of the old Hindu temple at Martand, near Islamabad, should not be missed, and the remains of the beautiful gardens at Achibal and Manasbal, as well as those at the end of the Dal Lake, are well worth seeing.

The carpet factory at Srinagar should be inspected and the workshops of the woodcarvers and silversmiths, and the visitor is not likely to leave without purchasing some specimens of the artistic products of the country; in fact, he is sure to be much worried by the pertinacity of the tradespeople, who will never leave him in peace, and invade the houseboat or hotel bedroom alike with their wares.

In the following pages will be found a brief description of the game animals of the country, but as some of them live many marches apart it would be too much to expect to secure specimens of all in one season.

Kashmir has a wonderful fascination for the sportsman and lover of the beautiful, and one can quite realize the sentiments of the Emperor Jehangir, who, when asked, as he lay on his deathbed, if there was anything he wanted, replied, "Only Kashmir," and turned his face to the wall.

THE BARASINGH STAG

(*CERVUS CASHMIRIANUS*)

THIS fine stag is found in the Vale of Kashmir, chiefly on the eastern and south-eastern sides, also over the Sinthan Pass into Kishtwar, so that the sportsman has not a great deal of marching to do to reach his ground. The introduction of the game laws, and the fact that the natives are prohibited from selling the horns, has had a good effect on the barasingh; they have increased in numbers, and some fine heads have been obtained in recent years. Still, they cannot be described as very plentiful, and probably there are fewer stags killed in a season in the whole of Kashmir than in a single large forest in Scotland.

The horns of this stag are beautifully shaped, as a rule curving well out at the middle and approaching again towards the tips. They seldom carry more than twelve points; some of the best heads have only ten, and there is not much tendency to cup at the tops. The bez tine is nearly always stronger than the brow. In this respect this stag differs from most European deer, where the reverse is the case. He shares this peculiarity with the wapiti, and those killed after the fights of the rutting season are more likely to have the bez tine broken than any other. In general coloration the barasingh differs but little from the European stag, but always seems to me to stand shorter on the legs.

The forests of Kashmir are more luxurious on the slopes facing the north than on those facing south, on which the snow and moisture are too quickly dried up; the same thing is noticeable on the wapiti ground in the Tian Shan Mountains. The barasingh is a forest-loving animal, and the big stags nearly always keep to the higher ground.

The pleasantest time to hunt him is during the calling season, which begins towards the end of September and continues nearly through October.

By November the roaring has ceased, and the stag is difficult to approach, even if found, owing to the quantity of fallen leaves, which make so much noise in traversing. The first fall of snow gives the hunter a chance again, when he can follow tracks and move comparatively noiselessly.

The call of the barasingh seems to me to resemble that of the European stag very closely, though perhaps he squeals more. I have never heard



Photo by Mr P. B. Van der Byl.]

[Reproduced by kind permission of Rowland Ward, Ltd.

BARASINGH STAG.

PLATE XLII.

THE BARASINGH STAG

him produce that flute-like note of the wapiti, called by the Americans "bugling," which, once heard, whether in the Rockies or Tian Shan, is never forgotten.

Probably the most deadly time to hunt him is in the spring, shortly before the horns are dropped, but the game law does not allow him to be killed nowadays after March 15, so that the possibilities are rather curtailed. The barasingh seems to carry his horns very late, and I once saw two fair stags on the southern side of the Sinthan Pass still in possession of theirs on April 19. I think, however, this must have been exceptional.

H.H. The Maharajah of Kashmir has a certain number of *rukhs*, or preserved nullahs, in which his guests are occasionally permitted to shoot, and the care with which these are protected has a beneficial effect on the stock in the neighbouring valleys.

One of the best of these *rukhs* is called Dachgam, and the entrance to it is only a few miles' drive from Srinagar. Here, in 1910, as a guest of the Maharajah, I got a very fine royal with antlers measuring $47\frac{1}{2}$ inches in length; and as the proportions of the head are almost perfect it may be regarded as one of the best specimens on record.

This was killed early in March in the deep snow, the season not being sufficiently advanced to produce the patches of young grass which tempt the deer from the forest about this time. What the old stags can find to subsist on in the winter time is a mystery, as they seldom come down, and therefore must content themselves with a diet of tree bark and twigs, as one seldom finds indications of their having scraped away the snow to look for food beneath.

My particular stag was spotted by an assistant shikari, standing in thick tree jungle, across a narrow valley. Even with my telescope I could only see one horn clearly, and decided to chance the second one being as good and to take the shot, which was rather a long one, as soon as the stag moved to a more open spot. I had to lie prone in the snow a considerable time before my opportunity came. Then, as he moved forward a few paces, I was able to get a clear shot at his body and saw at once that he was badly wounded. There ensued a desperate chase of three-quarters of an hour, through deep snow, along the side of a steep hill. I occasionally got a glimpse of him toiling along in front of me, but the jungle was too thick for a sure shot. At last we were both reduced to such a stage of exhaustion that neither of us could go another yard. When I got up to the stag and was able

THE GUN AT HOME AND ABROAD

to put the tape over his horns, and observed the beauty of the head, I realized that I had secured one of the best trophies that has ever fallen to my rifle.

When hunting in the autumn I have never heard the stags call in the middle of the day, but only in the early morning and late evening, sometimes so late that there is no chance of a shot before dark. On this account I consider the morning the best time, as if the stag is roughly located then by the sound, one can watch the spot for the rest of the day on the chance of his showing himself.

The protection of hinds does not seem to have resulted in their increase to a sufficient extent to cause any deterioration in the quality of the stags' heads, which is sometimes the unfortunate result of attempting game preservation. Perhaps the leopards, of which there are a good many, find a hind easier to kill than a stag, and thus maintain the balance of Nature.



Photo by]

[Terry.

SAMBUR.

Shot in Neilgerrie, India, by the late Sir Wm Jaffray, Bart.

PLATE XLIII.

THE MARKHOR

(*CAPRA FALCONERI*)

THIS magnificent wild goat is found in the Kajnag and Pir Panjal Ranges of Kashmir, also in Astor, Chilas, the Gilgit region, Chitral and Afghanistan. The straight-horned variety inhabits the Suleiman Range and neighbouring regions on the North-West Frontier of India.

A good markhor head is certainly one of the finest trophies obtainable by the hunter in the Himalayas. It is interesting to notice that the horns of wild goats always twist outwards, if they twist at all, while with the tame species the reverse is the case.

Opinions differ as to whether the Kajnag or Astor type of head is the more beautiful, and I have never been able to decide which I like the better; but I am inclined to think that the finest of many I have examined is one which now hangs in the hall of the Senior United Service Club in London, and which I believe was killed a few years back by Major Knox in the Kajnag.

The record head killed by an English sportsman was secured by Captain Barstow near Gilgit, and measures $60\frac{3}{4}$ inches. This was a wonderful instance of a beginner's luck, as I believe it was the first markhor ever shot by this sportsman, and men who have been quartered in Gilgit for years and have been constantly on the look-out have never seen one nearly as big. Still, this head is hardly as fine a trophy as some that measure several inches less, as the horns do not match each other well in curve.

The wide variety with the bold curve is not met with in the Kajnag, though in Astor and Chilas horns sometimes approximate to the Kajnag type.

The markhor is a difficult animal to hunt; he delights in bad ground, and when opportunity offers takes refuge in the scrub. His habits are not so dependable as those of the ibex. Often, when a stalk looks easy and a shot certain, he will change his ground for no apparent reason; and after a long approach you will find he has transferred himself to the side of the nullah from which you originally spotted him, it then being too late that day to make another attempt.

This wild goat lives at a lower altitude than the ibex, and in spite of his long coat seems to suffer no inconvenience from the heat of summer.

THE GUN AT HOME AND ABROAD

The rutting season of the markhor takes place in the winter. He then comes quite low down, and is said to be comparatively easy to get, but I have never hunted him at this time of year. Although not a graceful-looking animal, he is wonderfully active over bad ground, and the only beast I have seen on worse places is the tahr. Care must be taken not to fire the shot when he is on a spot where a long fall is likely, as the horns may be seriously damaged. There is no more awful moment for the hunter than when he hears his beast go crashing down the mountain side after the shot which perhaps he has waited days for.

The best head of this animal I ever secured was in the neighbourhood of Chilas, where hunting is only possible by special permit, as this portion of the country is under the Gilgit regime. Here I had an example of a peculiarity of the markhor which I had heard of before, but had not met with in my previous experiences: this is the circumstance that he seems to be very little alarmed by the sight of a fire at night. I had been stalking all day on the opposite side of the nullah to where my camp was, and although I had sighted a good head, I was unable to get a shot that evening. I therefore determined to spend the night under a rock and not return to camp. As I had not contemplated this contingency, I was unprovided with extra clothing, and before dawn endured such agony from the cold that I resolved to light a fire even if I scared every markhor out of the country.

I was agreeably surprised to find that my shikari raised no great objection to this, and we cowered together over the tiny fire till dawn broke, when we sighted our beast quite unalarmed only a few hundred yards away, and managed to secure him within an hour. The only conclusion I can come to on the subject is that they are so accustomed to seeing the fires of goatherds who camp on the hill with their flocks, that they do not connect the sight of them with the likely presence of the hunter; but this, of course, occurred in a country where the goatherd is not allowed to carry arms.

To the east of Gilgit, near the great peak of Haramosh, which stands over 24,000 feet, there is some good markhor ground, and opposite this mountain, on the south side of the Indus, there are two or three nullahs where these animals are to be found. To reach this locality from the Skardu side involves some strenuous marching, as the road is very bad and is frequently built out over the river on logs driven into the side of the precipice, while sometimes a piece of it is missing.



Photo by]

[Mr P. B. Van der Byl.

A CHILAS MARKHOR.

PLATE XLIV.

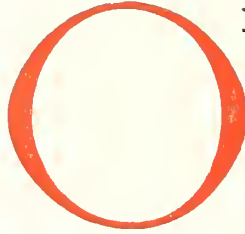
THE MARKHOR

Although the general altitude at which the markhor live is lower than that of the ibex, the latter occasionally, tempted by the young grass, descend and are found on the same ground; but I have never heard of any attempt at a cross between the two.

The heads of the Afghanistan and Chitral markhor resemble those of the Kajnag rather than the Astor variety; but it is unlikely that the ordinary sportsman will have an opportunity of hunting these till the country becomes far more civilized than it is at present. There are only a very few spots in the neighbourhood of the Suleiman Range where a white man can hunt the straight-horned species in safety.

THE IBEX

(*CAPRA SIBIRICA*)



F all the forms of mountain hunting there is probably none more attractive than the pursuit of the ibex, and the heart of the old hunter thrills at the recollection of the glorious days he has spent amid the peaks and glaciers while enjoying this splendid sport.

Although there are not many ibex on the mountains that encircle the Vale of Kashmir, still they are fairly numerous in the Wardwan, Baltistan, Astor and Ladak. In the old days men used to shoot fifteen or twenty of these animals on a single trip, and probably not half of these would be worth keeping; fortunately, the game laws have put a stop to this, and the general feeling among sportsmen now is that size of head and not quantity is what should be aimed at. In Kashmir and the neighbouring states any head of over 40 inches may be regarded as good, and out of the number allowed him by the game laws the hunter should be able to get at least one of these dimensions; anything under 35 inches should not be fired at. The length of ibex horns is easier to judge than that of most animals, and with a little practice and a good telescope one soon learns to estimate them within a couple of inches or so, especially if viewed in profile. It should always be remembered that those which curve well round in the segment of a circle tape much more than those which stand up rather straight from the head.

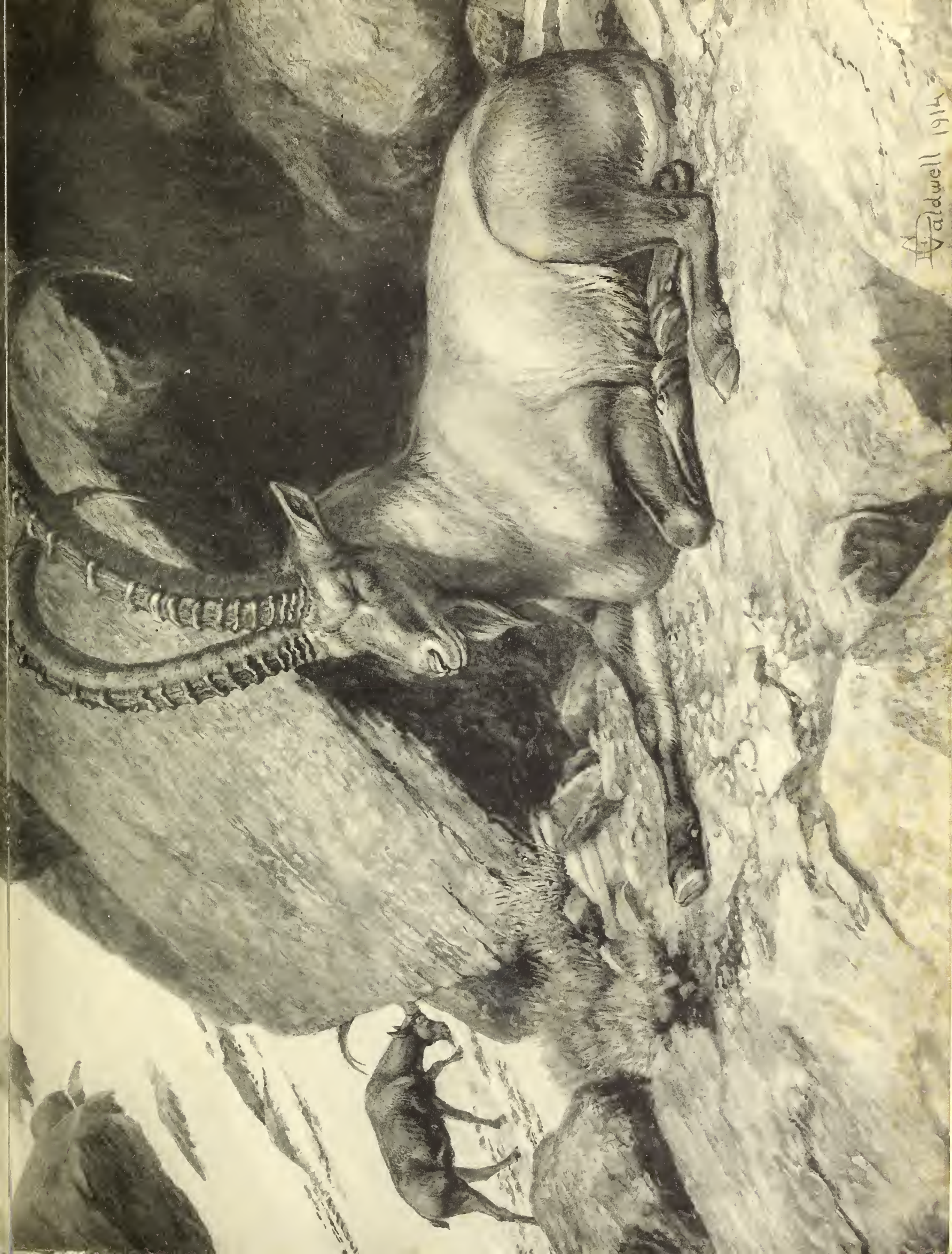
The best Himalayan ibex recorded in Rowland Ward's book of horn measurements is one of 55 inches, which was secured a few years ago by Lieut-Colonel Gurdon, near Gilgit; but this must be regarded as a very exceptional head, and any man who gets one of 45 inches or over on the ground open to the ordinary sportsman may count himself extremely lucky.

Towards the north the heads gradually get bigger, and from the neighbourhood of the Tugdumbash Pamir some very long horns have been reported; while in the Tian Shan Mountains the average may be considered quite ten inches larger than in the Himalayas. Going further north again they get smaller when the Altai is reached.

Provided he has not been recently disturbed by a previous sportsman, or rendered nervous by the pursuit of snow leopards, the ibex

HIMALAYAN IBEX (*Capra sibirica*)

PLATE XLV.



Galdwell 1914

THE IBEX

is not a difficult animal to stalk; and, granted that the wind and the nature of the ground are favourable, the hunter should be able to rely with tolerable certainty upon getting within shooting distance after sighting him.

The stalk should be made from above, as mountain beasts are always on the look-out downwards in the direction in which they know their hereditary enemy man dwells. If possible the finish of the crawl should land you almost on the same level as the herd, as then, if there is more than one head worth shooting, you will have a much better chance with your second shot. Be careful not to show yourself after the first shot, as the game will always stand and look round after the first short stampede. On one occasion I got two good bucks at one stalk, after missing entirely with my first cartridge; the echo from the cliff prevented their locating the sound, the ibex ran back nearly straight for me and I killed them both at short range. But I have always felt that I did not deserve this piece of luck.

The early summer is the best time for ibex shooting, as they come down to the patches of young grass. Later on in the season, when the snow melts, their feeding grounds are so much extended that they are more difficult to locate. Their habits are much more reliable than those of the markhor, and if undisturbed they will come down to the same spot day after day to feed; so that if the wind or other conditions are not favourable for a stalk it is much better to leave it till another day and not run the risk of disturbing the game uselessly.

In the Himalayas the ibex does not seem to exist anywhere to the east of the Kumaon border, and it is curious that it has not a more extended range in this direction, where apparently there is plenty of ground just as suitable to his requirements. No man, however, can decide why animals sometimes confine themselves to certain localities and show no disposition to extend their range.

The word *kheyl* is used by the Kashmiris for ibex, but there is no fear of the English word being misunderstood by any native shikari.

In winter they seldom descend like the markhor, but seem able to maintain a precarious livelihood on spots too steep for the snow to rest on. What they find to eat there at this season is a mystery.

Few wild goats make decent food for a white man, but the native will gladly eat ibex provided he can make it lawful meat by *hallaling*, i.e. cutting the throat before it is quite dead. Care must be taken, however, to

THE GUN AT HOME AND ABROAD

see that he does not cut off the head too high up, and so spoil the skin for mounting.

I have sometimes been reduced to eating ibex myself, and have found those of the Caucasus and Tian Shan less highly flavoured than the Himalayan variety; but an old buck is always very tough, and the use of a mincing machine is requisite.

The goat-like smell clings to ibex heads for years after they have been cured and mounted, especially in damp weather; and few except the man who shot them will care to inhabit the same room.

All woolly heads are particularly susceptible to moth, and frequent brushing will be found more effective than any amount of insect powder.

OVIS HODGSONI

THIS sheep is called *Nyan* by the natives and is frequently spoken of as *Ovis ammon* by sportsmen; but the true ammon inhabits the Altai Mountains.

The *Ovis hodgsoni* is found in Ladak, Changchenmo and Western Tibet; his horns do not seem to vary much in shape, and nearly always curve in close to the cheeks. Those of the great sheep further north usually have a much longer tip to tip measurement, sometimes approximating to the *Ovis poli* in type, though thicker at the base.

Like all wild sheep the coat of *Ovis hodgsoni* is composed of hair and not wool. The horns of old rams are nearly always broken at the tips from fighting.

The size of a ram's horns is much more difficult to estimate than those of an ibex, and as the sportsman is only allowed to kill one on his licence, the greatest care must be taken not to make a mistake and shoot a small specimen.

In summer the old rams are generally found apart from their ewes, and, owing to their acute power of smell and the fact that they usually lie up in the middle of the day in a comparatively open place, are particularly difficult animals to stalk. In Ladak the wind is very shifty, and walking at this high altitude is trying work. As the ground is seldom very steep a pair of rubber-soled boots will be found useful.

Ovis hodgsoni is said to be migratory in his habits, and he certainly wanders a good deal, for places where these sheep are sometimes seen in fair numbers at other seasons hold none at all. Now that the "block" system has been introduced for their further protection the total number that can be shot each season has been materially reduced. Hitherto the twenty "guns" allowed into Ladak—both first and second leave—were each allowed to kill one, and it is to be hoped that the new regulations will be found sufficient for the preservation of these fine sheep.

THE SHARPOO

(*OVIS VIGNED*)

THE sharpoo is found in Ladak and in parts of Baltistan and Astor, usually in nullahs which run down to the Indus River. In Ladak good heads have been getting scarce of late years, and the habitat of this sheep, like that of *Ovis hodgsoni*, has been divided up into blocks.

The sharpoo of Ladak resembles very closely the urial of the Punjab, and the same sheep, with slight variations, extends through Persia some way into Asia Minor. Although very similar in general appearance, the climatic conditions under which the various races of sharpoo live vary considerably, the elevation of the Salt Range in the Punjab being very much less than that of Ladak. The horns of this animal are usually very graceful, and vary much more in shape than do those of *Ovis hodgsoni*. The old rams seem of a nervous disposition, and frequently change their quarters when apparently settled in the middle of the day. This makes them difficult to stalk. The ground on which they dwell, though not precipitous, consists of fairly steep slopes covered with loose shale, which is both noisy and tiring to walk over.

To give an instance of their restless movements, on one occasion, when I was stalking a herd in a nullah running down to the Indus in Baltistan, and had got almost within shooting distance, they suddenly transferred themselves, for no apparent reason, right across the valley to a spot over a mile away. This time, however, they really did settle down, and my second attempt was more successful.

In winter they come low down, especially near Bunji in Astor. In the old days the native hunters used to account for many at this season, but this, fortunately, is now restrained by the officials of the Game Preservation Department.

A cross between the *Ovis hodgsoni* and the sharpoo is said to occur occasionally, but I have never seen a specimen of this hybrid.



LADAK URIAL OR SHARPOO (*Ovis vignei*).

Length on front curve $36\frac{1}{4}$ inches: Circumference $10\frac{7}{8}$ inches: Tip to tip $10\frac{1}{4}$ inches.

Locality: Baltistan. Shot in 1898 by Sir Thomas A. Salt, Bart.

PLATE XLVI.

THE BURHEL

(*OVIS NAHURA*)

THIS sporting little sheep has an extended range, and is to be found in Ladak, Changchenmo, some of the nullahs on the Pamirs, and a long way eastward into Tibet.

Along the main chain of the Himalayas he is found further than any other species of Kashmir game. Probably some of the best localities in which to hunt him are those lying north of Mussoorie, in the neighbourhood of Gangotri. He seldom descends below about 12,000 feet at any season, and in summer may be met with as high as 16,000 or 17,000 feet. In general habits burhel resemble the goats rather than other wild sheep.

These animals are fairly numerous in the localities in which they are found, and as they sometimes run in big herds, the hunter, with any luck, may secure two or three heads at one stalk; but where there are so many pairs of eyes to be eluded it is always more difficult to make an approach. Owing to the similarity of their colour to the ground on which they live they are difficult animals to spy, especially when lying down, and it is not easy to pick out a good head. The old males may, however, be distinguished by the dark colour of their chest marking.

In Ladak the natives build up the old horns which have been picked up into piles along the track, and it is always interesting to examine these and note any peculiarities. In some districts they appear to be shorter and thicker than others, which may be due to variety in their feeding.

Burhel do not seem to lie down in the middle of the day so long or so regularly as most mountain game. They may be found on their feet feeding at any time, and out of a big herd there are always sure to be some on the look-out for danger.

Their flesh yields the best eating of all the Himalayan animals, and in a country like Ladak, where supplies are scanty, they form a very welcome addition to the commissariat. Fortunately they are sufficiently numerous to allow the sportsman to kill a liberal allowance under his game licence.

THE TIBETAN ANTELOPE

(*PANTHOLOPS HODGSONI*)

THIS antelope, called *chiru* by the Ladakis, is found in Chang-chenmo and extends some way eastward over the Tibetan plateau. The bucks have black horns, somewhat similar in shape to those of Grant's gazelle in East Africa, and the females are hornless. The puffiness of the face gives this antelope a curiously underbred appearance. The *chiru* is only found at high altitudes, between 13,000 and 17,000 feet; the coat is rather woolly and if the beast is shot in summer is very apt to slip.

Owing to the absence of cover it is not easy to approach these animals, and long shots usually have to be taken. In summer they suffer a good deal from the grubs of a fly deposited in the skin; this causes considerable irritation and keeps them on the move, and one constantly comes across the hollows they have scraped in the ground as beds. Few big heads have been obtained in Kashmir territory of late years, and unfortunately the hunter is now prohibited from crossing the Tibetan frontier. As a beast of chase the *chiru* cannot be ranked very high; but a head is an interesting trophy, and shows that the sportsman has marched far to get it. The meat yields quite good food.

THE TIBETAN GAZELLE

(*GAZELLA PICTICAUDATA*)

THIS pretty little gazelle, known locally as *goa*, is found in a few isolated localities in Ladak, generally not far from the ground inhabited by *Ovis hodgsoni*. Unfortunately these gazelles are nowhere very numerous. The horns are not unlike those of the Indian chinkara. The attempt to stalk them is an irritating business, as they generally have to be approached over a gravelly plain, where there is but a poor chance of concealing oneself, and they are constantly twitching their tails and moving on. At two hundred yards the animal looks absurdly small, and the rifle must be held very straight to hit so diminutive a mark.



Photo by]

[Mr. P. B. Van der Byl.

AN ASSAM BISON.

THE YAK

(*BOS GRUNNIENS*)

THE yak is to be found in Changchenmo and thence a long way into Tibet, but owing to the game regulations it is not possible to hunt him in Kashmir territory. The Maharajah of Kashmir, being a Hindu, to whom the cow is a sacred animal, this law has been introduced to avoid hurting his religious susceptibilities. As the crossing into Tibet from British territory is prohibited at present, it is very difficult to secure a specimen of this animal. The journey to the yak ground of Tibet from any other direction is a very wearisome business, and it is to be hoped, now that commercial relations with the Tibetans are being established, that the restrictions against entering the country from India may be ere long removed.

In the old days bull yak were not usually found in Changchenmo before September, when they migrated over from the Tibetan side; but of recent years they have been so little disturbed that some of them do not leave Kashmir territory at all.

The yak is closely allied to the bison family, but does not possess the high withers of that race. The wild species is black with a greyish muzzle, while the domesticated variety, which is much used for transport in Ladak, shows a good deal of white. The yak derives its scientific name from its grunting proclivities. It is a useful beast of burden, slow but sure, and cannot be hustled.

The old bulls as a rule are found alone. The animal possesses a keen sense of smell, and a stalk is often spoilt by the intervention of the inquisitive kyang, or wild ass of the country. For an animal of this size a rather larger bore rifle than is used for other mountain game is to be recommended; but the extra weight is very trying to carry at these high altitudes, and the weapon is not likely to be wanted for anything else, except possibly a bear drive in Kashmir.

The tufted tail of a yak is considered a trophy, and is used in India as a fly whisk on ceremonial occasions; but in England these woolly things are very difficult to keep from the moth.

THE TAHR

(*HEMITRAGUS JEMLAICUS*)

THIS animal is found in Kishtwar, Chamba, Garhwal and some way eastward along the main chain of the Himalayas; there are also a few in the Pir Panjal range, where they are to be met with in the same nullahs with the markhor. Although the tahr does not live at quite as great an altitude as the ibex or markhor, he frequents about the worst ground of any of the goat tribe; he loves precipices, especially if there is any timber or scrub handy for him to hide in. He is an attractive animal to hunt, and it seems a great pity that he does not carry a larger pair of horns. Still, a tahr's head, well set up, with the long hair on the neck, makes quite an interesting trophy.

The tahr is fairly reliable in his habits, and if undisturbed returns to the same feeding ground day after day. In the summer-time the old bucks are usually met with apart from the females.

Owing to the nature of the ground on which they live they are very likely to fall a long way when shot, but as the horns do not project much from the head there is a fair chance of their escaping damage.

The best tahr I ever shot I watched through the telescope every day for a week before a good opportunity of making a stalk presented itself. When at length I did manage to get near him the ground was so steep that my shikari had to hold me by the legs while I leant over the precipice for the shot.

To reach the tahr ground in Kishtwar the route lies through lovely scenery. One of the roads to Ladak runs through Kishtwar and over the Umasi La Pass, but the drawback to taking this way is the scarcity of coolies and supplies on the latter half of the journey. When after tahr the sportsman will probably find red bear and goral in the same locality.



Photo by Mr. P. B. Van der Byl.]

[Reproduced by kind permission of "Country Life."

A KISHTWAR TAHR.

PLATE XLVIII.

THE GORAL

(*UROTRAGUS GORAL*)

THIS sporting little animal is fairly plentiful in Kishtwar and the Siwaliks, and extends for some way eastward along the main chain of the Himalayas; there is also a species of it to be found in Burma and Western China. Though rather smaller than the European chamois, it resembles that animal a good deal in habits and general appearance and never ascends to very high altitudes. The bucks are usually found feeding alone, and seem to show little fear of the natives or their habitations; in fact the first goral I ever shot was in a cornfield at the back of a village. I was told he came out of the forest to feed regularly every evening at five o'clock, and waited for him, and sure enough he appeared punctually as predicted. Though not much to look at, he is a sporting little beast to hunt, and very good training for the beginner in mountain shooting.

THE SEROW

(*NEMORHÆDUS SUMATRENSIS*)

THIS solitary beast has an extended range in the Himalayas; it is nowhere numerous, and the localities where it is found are often some distance apart.

There are several races existing in Assam, Burma, and Sumatra, showing slight variations in colour.

Both males and females carry horns of about the same size, and rather resembling those of the Rocky Mountain goat. They inhabit rocky forest ground, and are of a very shy disposition, though not much hunted; their movements are ungainly, but I have seen them get over quite bad places. The serow is nearly always found alone, and is said to be dangerous to approach when wounded; the only one I ever killed fell dead to the shot and had no chance of showing fight.

THE BLACK BEAR

(*URSUS TORQUATUS*)

ALTHOUGH black bears have been thinned down a good deal of late years in Kashmir, they are still pretty numerous, and they are now the only animals which it is lawful to drive. The leopard, of course, is treated as vermin, and may be shot under any circumstances.

The shooting of bears cannot be ranked very high as a sport, but their habits, especially if they are accompanied by their young, are very fascinating to watch.

They are apt to be dangerous if encountered suddenly, and a well-known lady resident of Srinagar was attacked in the most unprovoked manner as she was walking down the Dachgam nullah a few miles from the capital. She had a wonderful escape, but her native attendant got badly mauled.

Anywhere near a village these animals do considerable harm to fruit and crops, and occasionally take to cattle slaying.

Like all their family, these bears take a good deal of killing, and a rather larger bore of rifle is to be recommended, particularly in a drive, where a wounded bear may attack some unfortunate beater.

Their coats are in best condition in the spring and late autumn, but the black bear does not seem to sleep continuously throughout the winter, and may wake up at any time. The chief points that strike one in their general appearance are the rounded ear tops and white shirt fronts; they climb trees readily and the claws are black and shorter than those of the snow bear.

In November a wonderful migration of black bears takes place, from the Vale of Kashmir westward into the district of Poonch; and the rajah of that place has an annual shoot lasting three or four days, at which I was once privileged to attend.

A vast number of beaters are employed, and machans, or platforms, are placed in trees, so that there is little risk to the sportsman, though casualties among the beaters are not uncommon. As many as forty bears are sometimes killed in this manner in three days.



Photo by]

[Mr. P. B. Van der Byl.

A BEAR SHOOT IN POONCH.

PLATE XLIX.

THE RED BEAR

(*URSUS ISABELLINUS*)

THIS animal, often spoken of as the snow, or red, bear and known to the Kashmiris as *lal bhalu*, is a good deal scarcer than it used to be, and the number allowed the sportsman on his licence has now been limited.

It lives at a higher elevation than the black bear, and is seldom if ever found in the timber, and in the spring and late autumn carries a very fine coat.

The red bear is a comparatively harmless animal and seldom takes to cattle killing. As with all this tribe the eyesight is poor, but the sense of smell acute. The claws are longer than those of *Ursus torquatus* and are brown in colour. The track left by these animals is extraordinarily like that made by a man's naked foot.

As they are generally stalked and shot on the open hillside, while grubbing for the young grass and roots where the snow has melted, accidents with red bears are rare, though it might be otherwise if they were come upon suddenly. They seem to sleep continuously through the winter, and I have never heard of their being seen abroad at that time.

Probably Kishtwar and Chamba are the best places to look for them, but they are also found in Chilas and Gilgit. While hunting markhor in the former district I was nearly run over by one which was disturbed by my tiffin coolie on the hill above and came blundering past within ten yards. I shot her before I realized that she was accompanied by two cubs, which I left in the hope that they were big enough to take care of themselves.

OTHER GAME ANIMALS OF KASHMIR

IN addition to the foregoing, the hunter may meet with the beautiful snow leopard, which, though by no means rare, is very seldom seen. How often one comes across their tracks when after ibex and markhor, and how very seldom one ever gets a sight of one. The best chance is to leave out an ibex carcass and visit it at dawn.

The ordinary leopard is fairly plentiful in the Vale of Kashmir, and may sometimes be got by tying up a goat and sitting over it towards sundown; but the best time to shoot them is in the winter when they can be tracked in the snow. It must not be forgotten that they are dangerous animals to follow up when wounded, and Colonel Turnbull, a man of vast experience in this kind of hunting, lost his life a couple of years ago in this manner.

The pretty little musk deer may be seen occasionally. They have no horns, but the bucks possess canine teeth two or three inches long. It seems a pity to shoot them, as they have been much persecuted for their musk pod.

Lynx and wolf are to be found in Ladak and Changchenmo, also the kyang or wild ass, but this last can hardly be regarded as game.

The duck shooting in winter is about the best in the world. Hokra, the Government jheel, is shot regularly throughout the season, the "guns," seven or eight in number, being placed in tubs. Anyone who has once heard the roar of the first big flush of duck at this shoot will never forget it.

Enormous bags of wild fowl have been made by Mr M. T. Kennard and other sportsmen, shooting by themselves.

P. B. VAN DER BYL.



Photo by Mr Charles Arthur.]

[Reproduced by kind permission of Mr Charles Arthur.

A DUCK SHOOT AT HOKRA.

PLATE I.

CENTRAL ASIA

INNER Asia, as a sporting country and as the home of some of the finest beasts of the chase, has remained comparatively unknown until quite recently. It has rested secure, jealously hiding its unguessed possibilities in the way of "ampler hunting grounds," being safely barred from intrusion by endless deserts and gigantic mountain walls.

The barrier of the Himalayas, the Russian steppes, aided by political intrigue, kept the heart of the continent long closed to hunters who were eager to try the new fields opened suddenly by the arrival of European prestige and influence. Only the progress of western power in Asia and the final settlement of international boundaries, have brought about a state of affairs that has enabled the naturalist and the hunter to visit those regions, which they had long known of but had been forbidden to visit.

Considering that it is only fifty years since the Russian penetration of Central Asia was an accomplished fact, and that the very first explorers from India only succeeded in climbing the mountain barriers and in looking down into the secluded heart of the continent about seventy years ago, it is not surprising that inner Asia is comparatively new ground and that the list of travellers who have visited it is a short one. It is not more than twenty-five years ago that the first hunters reached the real home of the finest and most highly valued of Asiatic trophies—the *Ovis poli* of the Pamirs. That paradise for sportsmen—the remote Tian Shan ranges—was only discovered some sixteen years ago, and only during the last few years has it come to be regularly visited by Englishmen. The other main shooting ground of inner Asia—the Mongolian Altai—held its treasures unappreciated and its sacred valleys undesecrated by European hunters until 1895.

Broadly speaking, the Pamirs and the Tian Shan have been the goal of all hunters who have desired to visit innermost Asia. These are the two great strongholds of wild game, they hold the finest trophies, and, with their outlying spurs and surrounding plains, compose what is generally, but rather indefinitely, called Central Asia. But in order to give a description of the game of Central Asia that will in any way be complete, it is necessary to include the whole vast tract of country which reaches from the Caspian to Mongolia. India, Persia and China are described elsewhere; they are regions belonging to separate faunistic zones. But Transcaspia, Russian and Chinese Turkestan—bounded by Afghanistan,

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the Karakorum and Tibet on the south, and losing itself in the Siberian plains on the north, come under one descriptive area. Mongolia, the deserts of Gobi, Manchuria and far north-eastern Siberia are reserved for another chapter.

Inner Asia, on the whole, is a region of uniformity, occasionally broken by violent contrasts. It is all more or less in the same latitude, it is all of the arid type of country, a land of immense steppes and deserts, bordered and ridged by great mountain ranges. The plains of Central Asia are without variety and extraordinarily monotonous, they are practically of one character throughout. But the highlands, although all of the same type, are exceptionally beautiful and surpassingly interesting. To the hunter they are a veritable paradise and provide some of the finest hill stalking in the world. So the desert frontiers of Inner Asia are passed by heedlessly, the attraction almost always being the plateaux of the secluded mountain ranges. Long, tiring journeys are necessary in order to reach one's ground, and still more tedious stages in order to return to civilization. The finest hunting grounds are 800 miles from railhead in Russian territory, or two and a half months' journey from railhead in India. Yet these inconveniences mean nothing to the man who can possibly obtain the time necessary for carrying out such a journey.

Of innermost Asia, the Pamirs have always been the most romantic locality. Its native name, *Bam-i-Dunya*, the Roof of the World, has an attraction beyond a mere geographical significance; its position as the meeting-place of three great empires has an historical and political interest; while as the home of that gigantic sheep, *Ovis poli*, named after its discoverer, the great Venetian traveller, Marco Polo, the Pamirs are the ambition of every hunter. The size of the giant wild sheep of the Pamirs has appealed to the imagination of every traveller who has come in contact with him. Marco Polo described him as "a wild sheep of great size, whose horns are good six palms in length. From these horns the shepherds make great bowls to eat from, and they use the horns also to enclose folds for their cattle at night." Six palms as the length of their horns is no exaggeration, for there are heads in existence which measure 75 inches in length, and men have shot them with 65-inch horns. In height at the shoulder they are as big as a donkey, and their horns weigh as much as 50 lbs. Yet no one hunted this truly magnificent beast, no man even saw him in the flesh, until that pioneer of frontier exploration, Captain Wood, in 1837



Sheep-ground in Central Asia.



Ibex-ground in Ladak.



Wapiti-ground in Southern Siberia.

THREE TYPES OF GAME COUNTRY IN CENTRAL ASIA.

PLATE LI.

CENTRAL ASIA

penetrated to the source of the Oxus and brought back a head of this wild sheep, thus enabling the naturalist Blyth to name it. A long time elapsed before any other Englishman visited the Pamirs. The next head of *Ovis poli* to be brought to England was a 65½-inch head which Colonel T. E. Gordon, of the Forsyth Expedition to Yarkand, brought home to the British Museum in 1874. About this time the Pamirs were beginning to attract much attention on account of international jealousy. In 1860 the Russians were already pushing southwards from their new-acquired possessions in the Central Asian Khanates; and it was only during the unsettled period that followed, when it was still undecided as to whom the Pamirs belonged, that the few hunters who have traversed the great plateau made their journeys. The first Englishman to make a hunting trip in these regions was Mr St George Littledale, who in 1889 visited the Great Kara-Kul Lake, and during the following year, in company with his wife, crossed the Pamirs from north to south. He crossed the main haunts of the *Ovis poli* and hunted on the Kara-Kul, Alichur, Great and Little Pamirs—magnificent hunting grounds long since closed to travellers not of Russian nationality. In the same year Major Cumberland killed *Ovis poli* in the Taghdumbash (or Chinese) Pamir, and in the following year hunted on the Kara-Kul Pamir on his way from Kashgar to Margelan. In 1892 there arrived the last British sportsman to be allowed to visit these highlands, which had by now become Russian property, namely, Lord Dunmore. Since then scientific explorations and journeys of political import have been the only means of bringing travellers to these solitudes. The ordinary sportsman has been rigorously excluded.

The story of the hunting of *Ovis poli* is a sad one, for although the Britisher was first on the scene, the Russian has become the actual possessor of these fine shooting grounds. No foreigner can to-day even visit the locality where Wood first found the great curling horns and brought them back as proof. Those were the palmy days, when the "Roof of the World" was a no-man's land; but it only lasted a few short years, as the entire region became Russian territory within a few years of its discovery. Yet there remained a slice which belonged to the Chinese Empire, namely, the Taghdumbash Pamir, a name now familiar, for it is the only *Ovis poli* ground which remains open to us. But even this is only a small locality, one valley out of a world of ranges; already the great wild sheep know the line of demarcation between the two empires, and prefer Russian soil. For the most part the *poli* have retreated westwards,

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where the great feeding grounds of the Alichur, the Great and Little Pamirs and Kara-Kul still afford a safe retreat. The further west one goes, the more likely one would be to find untrodden valleys, where wild sheep remain unhunted. Probably the westernmost portions of the Alichur and Sarez Pamirs are their real strongholds in these days.

Further than this into the western declivities of the Pamirs they do not range, but to the west of Kara-Kul Lake, at the head waters of the Panj River, there are said to be sheep. This seems to be the western limit of *Ovis poli*. Throughout Karategin, Baljuan, the mountainous portion of Eastern Bokhara and the Zarafshan district there are no wild sheep.

The nature of the actual haunts of these sheep, as well as the nature of the so-called "roof of the world," has been much misrepresented. Snow and ice, precipices and crags have nothing in common with the habitat of *Ovis poli*, any more than the Pamirs are a tableland or a high-lifted plateau like Tibet. Luxuriant meadows and rolling downlands are the feature of wild sheep country in the Pamirs, as much as it is of sheep grounds elsewhere. One can *ride* over the greater portion of their country. A sketch of the Pamirs will show the type of country which the *poli* inhabit, and the difficulties with which the hunter has to contend.

The Pamirs are in reality a succession of broad, open mountain valleys situated at a high altitude. The word Pamir should be only applied to six or eight of these, which are in amongst a vast world of high mountain ranges, covering the whole area bordered by the Oxus River, the plains of Chinese Turkestan, the Ferghana of Russian Turkestan and the Hindu Kush. The title "Pamirs" is generally broadly applied to this whole region, but to be exact the word really only describes the big, open pasture lands which are the resorts of Kirghiz nomads and the *Ovis poli*. There are eight localities of this type—the Taghdumbash, Wakham, the Alichur, Sarez, Rang-Kul, Kara-Kul and the Little and Great Pamirs. All these are true Pamirs, the intervening country and the bordering region being high snow-capped mountains.

The conditions of such a country are peculiar. The mountains rise to 20,000 feet, the high, open valleys average 12,000 feet. The encircling ranges cut off all moisture from its inner portion, consequently the Pamirs have the least rainfall of any other locality in the Russian Empire. The mean yearly temperature of this remarkable region is only just above freezing-point, but it experiences phenomenal changes between great heat and great cold, the variation between the maximum and minimum



OVIS POLI.

Shot at an altitude of 16,000 ft., Russian Pamirs.

Length 56 inches: Circumference 16 inches: Tip to tip 42 inches.

Shot by Mr Alfred Ezra.



OVIS POLI.

Length on front curve $69\frac{1}{2}$ inches: Circumference $14\frac{1}{2}$ inches: Tip to tip 39 inches.

Locality: Tagdumbash.

In the Collection of Sir Edmund G. Loder, Bart.

PLATE LII.

CENTRAL ASIA

being 74 degrees. For half the year the Pamirs are a wilderness of snow, but the open parts are swept by bitter winds, deep snow cannot lie, and the wild game are thus enabled to get at the pasture beneath. During the brief summer these upland valleys are alive with birds and beasts, nomads and their flocks, all seeking the rich pastures laid bare by the melting snows. It is a country to visit in summer, the later one goes the better. Up till the end of May great cold can be experienced and newly fallen snow is likely to prove an obstacle. Probably August is the best month for getting at the game.

The Pamirs, as before explained, are "forbidden ground" to the Britisher, only the Taghdumbash or Chinese section can be visited. This Pamir lies on the south-east of the main plateau, and is easily reached in the right season from Gilgit; in fact, it lies almost on the direct track which connects India with Chinese Turkestan via the Hunza Valley. In old days this route was difficult enough, but now a good track connects Kashmir with Chalt, two marches beyond Gilgit. From mid-May till mid-October the track can be depended upon. The actual crossing of the Indian frontier, over the Karakorum range, is opened for about the same length of time. There are two routes, via the Kilik Pass and the Mintaka, the former is the easier, being actually used by laden pack-ponies.

Travellers from India bound for the distant Tian Shan come this way, and generally try for a chance at *Ovis poli* en route. But during recent years the heads obtained show that it is scarcely worth the trouble involved. Harassed by stray sportsmen in summer, killed off by wolves and natives in winter, the wild sheep have retreated westwards, where there is less persecution and wilder country. What the exact state of the hunting grounds of the true Pamirs are, to what extent the sheep have survived the coming of the Russians and the building of forts, and whether they are still numerous and carry fine heads—to these questions there is no possibility of giving a correct answer.

A glance at the list of *poli* measurements in Rowland Ward's records will tell a tale. The colossal heads of 70 and 75 inches are no longer to be obtained, even on the Russian Pamirs. The Chinese Pamir has not produced many heads over 60 inches for several years, and one is lucky to get one over 50 inches now. What the Russians have procured we do not know. Officers quartered at Pamirski Post should have had exceptional opportunities, for during the winter months the sheep must be concentrated into narrow surroundings and consequently should be easy to find.

THE GUN AT HOME AND ABROAD

Hunting on the Pamirs is attended with no great difficulties should the journey be undertaken at the right season. Cold weather should be provided against by using warm tents, for there is no fuel except "burtsa" (small scrub with a big root) and the dry dung of yak, horse and camel. The only inhabitants are a few Kirghiz, who cannot supply the traveller with much more than shelter and the milk from their flocks. An expedition should be as self-supporting as possible. When once on the Pamirs travelling is accompanied with no very great obstacles, the crossings from one valley to another are high but fairly easy, the actual sheep country being, as is usually the case, rolling grass and shale ridges. The home of *Ovis poli*, as pictured amid snow and ice, crags, rocks and precipices, is a dream of the imagination. But the stalking is difficult by reason of the bare, smooth sky-lines and featureless nature of the country. Long shots are the rule. The altitude may try some hunters if sudden exertion is demanded of them, but sheep hunting does not as a rule make such calls on one's energy, for a great deal of the strain is done away with by the use one can make of horses.

Other details of sheep hunting will be described in the account of the Tian Shan hunting grounds, and apply equally to the pursuit of *Ovis poli*.

The hunter will not find much else to occupy his attention in the Pamir region. Snow leopards, bear, ibex and burhal were found, but of these only the latter is likely to be worth spending time over. On the way from the Mintaka Pass to Yarkand, towards the east, they are numerous. Although not considered to be an ibex country, the Taghdumbash has produced a "picked-up" head of 55 inches, a truly remarkable size for an ibex not from the Tian Shan range, and a very good head even for that home of great ibex.

Once across the Karakorum range the heart of the great Asiatic continent lies unveiled before one. The Pamirs are a fine "taking off" place. From here one can view the geographical and zoological features of Inner Asia without obstruction. Out of the vast plains and deserts rise one great, predominant landmark, namely, the giant chain of the Tian Shan, which stretches in an unbroken line for close on fifteen hundred miles. It is isolated on all sides, except where by a narrow neck it joins on to the Pamir mountain system. Its isolation has caused it to become the home of several distinct varieties of the big game fauna of Inner Asia; it has also been the chief means of preserving its wonderful hunting grounds from becoming the camping place of every sportsman with a



TIAN SHAN RACE OF ASIATIC IBEX.

Lower specimen—Length on front curve $56\frac{3}{4}$ inches: Circumference $11\frac{1}{2}$ inches: Tip to tip $36\frac{1}{2}$ inches.
Shot by Lord Elphinstone.

PLATE LIII.

CENTRAL ASIA

few months at his disposal. The Tian Shan is one of the most remote localities which a hunter could choose to visit. He must give up five or six months to it if he wishes to make the most of his opportunities, and it is scarcely worth going four thousand miles to one's ground and not to do so.

The Tian Shan is a sporting locality of immense expanse and great possibilities. It is not even all explored. There is much untried country and an enormous area over which no European hunter has ever attempted to test his luck. One may still try new valleys and chance to discover the unknown abodes of wild game which have never been harassed by hunters. At any rate one can wander for months in idyllic surroundings, enjoying magnificent scenery and perfect camping country, and be certain of exceptional bags of ibex, roe deer, wild sheep and possibly wapiti and bear. There is no licence to be obtained, no permits or "limits" to be studied and adhered to. It is, moreover, an easy country to travel in, owing to the presence of a moving, nomadic population, who are used to travel and the chase.

The Tian Shan can be divided into two sections, namely, that portion of it which is under Russian rule, and that under Chinese. The line of demarcation between the two empires cuts the mountain range into two unequal portions, the Chinese owning about two-thirds of the whole. The entire area of wild, mountainous country, sparsely inhabited and for the most part holding game, is roughly a hundred thousand square miles, which should give a fair idea of the immensity of the Tian Shan hunting grounds.

The fact of it being portioned between the Russian and Chinese spheres of influence is of much greater importance than it may seem to the uninitiated. This alone has allowed the Tian Shan to be enjoyed by British sportsmen, for the Russian section is still forbidden ground, in very much the same way as the Pamirs are. The Chinese side has always been the goal of travellers, and in almost every case big bags have been made in territory which is not Russian. It may be argued that the Chinese area has proved to be the best for shooting purposes, but it is not so. I myself know sheep grounds in the western or Russian Tian Shan which cannot be equalled in the eastern or Chinese side. There are as fine ibex grounds in the west as on the east of the Russian frontier. It is quite probable that the wapiti are more numerous and easier to hunt in certain districts in the Russian sphere where there are not so many natives to

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pursue or persecute them. The majority of travellers go to the Chinese side because it is simpler, no special passports are necessary, and they know the ground by means of the accounts of previous travellers. Were they to attempt a sporting expedition in the Russian Tian Shan, even if they obtained permission, they would have to spend much time in trying the possibilities of new districts and risk experiencing disappointment. At the present moment the Russian Tian Shan is not open to British travellers. It lies within the jurisdiction of the Governor-General of Turkestan, and even with the special permit which the traveller must obtain in order to visit and pass through Russian Turkestan, he will not be allowed to go off the railways and the post roads. The hunter who visits the Chinese Tian Shan will pass for 800 miles along the foot of the mountains in the Russian sphere before arriving at his destination, which is, in nearly every case, the town of Kuldja, in the Ili Valley, a few short stages across the Russo-Chinese frontier. Kuldja lies on the northern side of the range, and it is only the northern side of the watershed which is game country, hence the importance of this town in the itinerary of any traveller in these regions. Whether he comes direct from Europe or works his way northwards from the plains of India, his goal is probably the same. At the present moment it is the only one to be recommended, unless the object of the expedition is to explore new country.

It is possible to reach Kuldja from England in about twenty days. The period is necessarily elastic, for the last 800 miles is by post road, consequently the season of the year, the state of the tracks and the supply of horses obtainable have to be taken into account. The route leads by rail or sea to Moscow or Petrograd, thence by rail through Orenburg to Tashkent. There may be details of stores or money affairs to be arranged in this capital of Turkestan, otherwise some time may be saved by leaving the railway at the wayside station close to Chimkent, for from here the post road leads direct towards the Ili. It is, roughly, ten to fifteen days' "posting" to Kuldja, but in early spring or early winter it may take still longer. A special permit, obtainable through the Embassy at Petrograd, is necessary in order to pass through Russian Turkestan. An ordinary passport is of no advantage in Russian Central Asia, and any traveller without special permission can be refused admittance. In the same way the importation of arms and ammunition has to be provided for by a request for a permit to bring in so many guns or rifles of such a calibre and so much ammunition. In forwarding requests for permits



From "Unknown Mongolia."]

[By permission of Hutchinson & Co.

TYPICAL IBEX COUNTRY IN THE TIAN SHAN.



THE AKSAI PLATEAU.

PLATE LIV.

CENTRAL ASIA

the date of arrival and point of entry should be made clear. The route intended to be followed should be stated and adhered to.

It is advisable to take tents and ordinary camp kit, none being obtainable in the country. Wet weather is sure to be experienced as well as snow. Hard usage on pack animals demands good material and sound kit. All food supplies can be left until the last town, Kuldja, where one can outfit in every detail of caravan, transport and supply. The distance is so great and the cost of transport so heavy that the rule should be to keep all outfit as small as possible and to take nothing unnecessary. The experienced traveller will gain an enormous advantage, for his pack animals will be able to go where heavily laden beasts with awkward packs will not only fail but come to grief. On one occasion I travelled for two months, covered 500 miles of more or less uninhabited country at a high altitude, and my total outfit was four horses, which carried my two men and myself as well as all kit and food. Cumbersome caravans composed of many horses add enormously to the ordinary difficulties, and may actually hinder the hunter from getting to the more impregnable regions, which are, of course, the best.

This is still more important should the traveller approach the Tian Shan from the Indian side, for he will have a long, hard trek to accomplish by means of pack horse instead of "posting" with "tarantass" and changes of horses. He will have at the start a long difficult climb over the Himalayas in order to reach the plains of Turkestan. This stage of the journey can be accomplished in about forty days, i.e., from Kashmir, via Leh, over the Karakorum Pass to Yarkand. It is a long, tiring journey, and cannot be compared with the Hunza route from the point of view of interest, though it might attract some sportsmen on account of the opportunities it grants of shooting specimens of the Tibetan antelope. The Karakorum Pass marks the most western range of this curious beast, the sole representative of its genus, which lives permanently at about 18,000 feet above the level of the sea.

By way of Srinagar and Gilgit the plains of Chinese Turkestan can be reached in about forty-seven days. Once on the northern side of Karakorum ranges there is nothing more formidable than an easily accomplished plain journey of about 350 miles to the fort of the Tian Shan. Travellers can go direct across the plains from Yarkand to Maralbashi and Aksu in about fifteen days, or should they have come to Kashgar it will take them only nine to twelve days to reach Aksu. From this oasis to the northern

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slopes of the Tian Shan is seven to nine days' march, which includes the somewhat difficult crossing of the Muzart Pass. The actual crossing of the watershed is easy enough, but on the southern side is a long glacier which must be followed up and which is bad going for pack animals. Having arrived on the northern slopes of the Celestial Mountains, the Tekkes Valley greets the travellers; its meadows and forests, and innumerable side valleys leading up to the haunts of roe, wapiti, ibex and sheep, being a very pleasant welcome after the tedious treks which have had to be undergone in order to reach it. Within three days to the north lies Kuldja, the rendezvous of all who have come hither from the Russian steppes or the Mongolian Altai, for the Upper Ili Valley is a cul-de-sac, and all who enter must come through Kuldja unless they have been energetic enough to climb over the Muzart Pass. All to the east is Chinese Territory, that to the west is forbidden Russian.

Of the main Tian Shan the principal locality for sport, that most frequently visited, and where the best heads have been obtained, is the area drained by the right affluents of the Tekkes River. Other districts have been tried, yet the comparatively small area seems to hold out more opportunities for sport than any other. The chief reason for this is the excessive ruggedness of the spurs of the main ridge, and the refuges created thereby. There are outlying ridges which rise to as much as 12,000 feet and which form protecting walls to the hidden valleys in the heart of the range. There are valleys up which it is only possible to force one's way by travelling on foot and taking lightly-laden lead horses with one's baggage. The steepness of the ridges, the close proximity of the high main ridge and immense areas of snow fields, and consequently the heavy rainfall resulting in wonderful pastures and large areas of forest, all combine to make this special portion of the Tian Shan suitable for holding large numbers of game animals, and especially adapted to enable them to survive many foes. The whole variety of trophies which the Tian Shan offers are to be found within a week's trekking of each other. Of course, a hunter may choose to go elsewhere and try new ground, and by doing this he may have greater success with wild sheep and perhaps wapiti, than that which the Tekkes district can offer; but for big ibex and roe deer it is quite unnecessary to go further afield.

As regards the season of the year there are one or two points which must be recorded, for so much depends upon favourable climatic conditions in this region of severe contrasts. It is difficult to get to the Tian Shan,



THE WILD-BOAR OF THE TIAN SHAN (*Sus scrofa nigripes*).



From "Unknown Mongolia."

[By permission of Hutchinson & Co.

ROE DEER AND KALMUK HUNTER.

PLATE LV.

CENTRAL ASIA

either from Europe or India, very early in the year; high passes, impassable post roads, and swollen rivers all hinder the traveller in the spring months. It is unlikely that actual hunting would be commenced before the end of May. There are then about three full months to spend on the high ground after ibex and sheep, and the option of another three months after roe, and in forests after wapiti. Hunting may be continued through the winter if the sportsman is keen enough to put up with the hardships which arise. It would be always cold on the high ground, snow may fall any time on the sheep country, and a considerable amount of rain must be expected. The heaviest rainfall occurs in the month of July over the Central Tian Shan. But wood is plentiful; camp fires are always to be enjoyed. For late autumn and winter work either *lined* tents or the native *yourt* are to be recommended, the latter for choice; but in the forest one need not fear the cold as much as on the plateaux. It is on the high bleak sheep grounds that the traveller will do well to supply himself with a good warmly-lined tent, for there are no camp fires to be indulged in and, indeed, scarcely sufficient fuel with which to cook one's food.

Any season will suit for ibex and sheep so long as the high meadows are not snow-bound; the roe deer shooting is limited by the short period that their horns are in condition, October and November being the best season; while the wapiti can be followed for fully four months. Generally speaking, six months—between June and November—spent in hunting ought to result in a good mixed bag, and a very enjoyable time free from any great hardship.

The arrangements of one's programme in the mountains should be made with a view to the latest date that it is desirable to return by. It is obviously necessary to attempt to get the ibex and wild sheep first so as to be ready to devote all one's time and attention to the pursuit of the roe deer and stags as soon as their horns are in condition and the latter are "roaring." On the other hand, a start cannot be made too early, for the high country is impossible to tackle before a certain date. The chief points to be remembered are that the ibex and roe deer will not give one much trouble to get, that the sheep may require a longer chase, and that the wapiti come last on the list and can be hunted for an almost indefinite length of time.

The usual itinerary of an expedition from Kuldja is to go south-east to the mouth of either the Kunguz or Jingalan Valley, and to follow one of these up, crossing by the Narat or Jamby and the Karagay Tash Passes

THE GUN AT HOME AND ABROAD

on to the Yulduz Plateau, which is on the southern side of the watershed, and which constitutes the main resort of the wild sheep in the Central Tian Shan. Should the hunter succeed here, he will return to the ibex grounds which lie at the heads of the tributaries of the Tekkes, such as the Kok-su, the Kok-terek and Agoyas Valleys. Here he can hunt to his heart's content amid glorious scenery and with plenty of game. He is certain to obtain many ibex trophies; he may get bear, wild boar and possibly a chance of snow leopard, while snow cock, black game, and innumerable chukar partridges will fill up his odd moments. Later on, towards the end of September, the lower foothills below the forest belt—where thickets and jungles of scrub and grass form the real haunts of roe deer—will attract his attention; having procured good heads of these, he will be close to the wapiti grounds in the forest above. The Kok-su will probably be the headquarters for the later portion of the expedition. It will be seen that the actual area of country to be traversed is comparatively small. Other more distant hunting grounds of the Tian Shan will be described later on.

For carrying out the whole of this programme, the caravan engaged at Kuldja can be depended upon. At any rate the headman or caravan *bashi* engaged there should be made responsible for supplying horses throughout the whole journey. In the mountains it may be better to hire provisionally from the local nomads. The hunter can always keep in touch with Kuldja and send mounted messengers, when necessary, to get provisions or to dispatch letters. Local guides and hunters must be obtained on reaching the mountains. The question of these presents some difficulties. There are many natives—Kirghiz and Kalmuk—who are hunters, but very few who have the least idea of serving a European in that capacity. The pursuit of the stag when the horns are in velvet, and occasionally fur and hide-hunting expeditions are about their only recommendations to be called shikaris. They are hardy, and for the most part trustworthy, and can be depended upon as guides, if fairly dealt with. One great secret in dealing with the native shikaris of the Tian Shan is to cope with them yourself and not to leave it to your employees; above all do not rely upon imported hunters if you wish to employ the locals as well.

In the districts mentioned, a successful trip should produce a bag consisting of ibex, wild sheep, roe deer, wapiti, and bear. The ibex are especially to be desired for this exact region produces the biggest heads that have ever been obtained. Although they range over the whole length



OVIS SEVERTZOVII (NIGRIMONTANA).



Photo by] [Mr J. H. Miller.
TIAN SHAN IBEX.



A COUPLE OF IBEX.
Killed in the Ala Tau Mountains.

CENTRAL ASIA

of the mountain pass, and live in every variety of scenery and altitude, yet the Kok-su Valley may be considered to be the haunt *par excellence* of the really colossal heads of 56-58 inches.

The Tian Shan ibex is one of the numerous varieties of the *Capra sibirica*, called *Capra sibirica almasyi*. It is found nearly everywhere. I have seen it on low sandstone foothills a few hundred feet above the plains, and it habitually lives at 13,000 feet—coming a bit lower in winter.

The remarkable numbers of ibex which exist in suitable localities is the wonder of all travellers who are lucky enough to have seen them. It is difficult to convey to the mind the impression that comes over one at the first sight of a big herd of these magnificent beasts grazing over the steep grassy meadows, between forest line and the eternal snows. The comparative easiness of the country is the first point which strikes one. Their feeding grounds are wide, grassy slopes, constituting a zone perhaps 4,000 feet in altitude and many miles in width between the forests and the shale and snow ridges above. The wonderful pasture, resulting from a heavy rainfall, grants an altogether unique supply for wild hill game to subsist on; they have all they want in the way of ample feed and safe retreats. The bulk of the ibex ground is pasture land; the rock and shale summits are in a minor proportion to the whole; forming an altogether different environment to the world of precipices and crag, dotted with isolated and almost impregnable patches of pasture, such as are the typical abodes of ibex in other parts of Asia. I have ridden up to ibex, that is to say to within 500 yards, and after a successful stalk, have taken the horses on to where the beasts lay dead. The great expanse and remarkable luxuriance of the high pastures is the feature of Tian Shan ibex ground.

In the early morning they come down off the shale slopes above, in herds of thirty to fifty bucks, and female troops of a hundred or more individuals. In summer, on one occasion one may see an immense mixed herd of males, females and young, and the next "spy" may show up a herd composed entirely of bucks. It is not a criterion that the biggest bucks are solitary, or even in small herds of half a dozen; one may find a herd of thirty old males, all of them with fine heads and perhaps a few with really colossal horns. In fact the size of the herds is one of the chief difficulties with which the stalker has to contend. Although the ground is easier, the actual stalking may be made most intricate on account of the numbers of beasts that have to be kept in observation. A herd of twenty or fifty ibex scattered over

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a steep grass slope are not easy to come up with, and the one or two big heads amongst them may be rendered quite unapproachable on account of the distribution of their companions. Early morning is the time to find them. The slanting light then shows them up quite well, even on the shale slopes, while on the grass they stand out clearly. This is a great advantage, for the hunter is enabled to determine whether the quarry is worth the trouble of a long and arduous climb. Camp is probably pitched in a valley bottom, amongst the forest, and the game has been sighted far away up on the grass slopes above the limit of trees, perhaps 3,000 feet above the hunter. It is therefore of paramount importance to know that you are certain of no disappointment on getting within range by finding no big head amongst them. A telescope is an essential part of one's hunting kit in these mountains with extensive views. Having sighted a herd and determined that it is worth a stalk, the next hour or two is spent in tediously climbing, on mountain pony or on foot, to some point of vantage *above* the herd. This is the first principle of success in ibex hunting: get above your beasts and you can do almost anything. Their sense of smell is not so acute as their eyesight. They will pick up an enemy below them with amazing alacrity, but from above, especially if it is the ground which they have recently left, they expect no foe and apparently do not even take the precaution of watching for one.

As a proof of this, I can instance a stalk I once made. A herd of ibex had been sighted from below; they were some 1,500 feet above me, moving down from a shale ridge into a huge grassy slope. I left my hunter and horses and stalked up a gully on to the shale at the point where they left it. On arrival I found thirty-two ibex scattered over the grass slightly beyond, but below me. Some were feeding, others were lying down, for there is so much grass that there is none of the hard concentration on getting breakfast such as one finds elsewhere amongst less lucky game. Without difficulty I dragged myself on my chest across the intervening space, most of the time within full view of at least half the herd, until I was sixty yards from the nearest. I had the whole thirty-two within view and within 150 yards of me, and I was within view of them if they cared to look at me. There I lay watching the magnificent sight of these perfect types of mountain game, feeding, sleeping, playing, and fighting, on the smooth grass slope below.

Quite early in the day the ibex move up into the rocks or the smooth shale slopes. On the latter they are quite unapproachable and may as well



SHEEP-GROUND IN THE UPPER BOROTALA.



From "Unknown Mongolia."]

[By permission of Hutchinson & Co.

A DAY'S BAG IN THE BOROTALA VALLEY.

CENTRAL ASIA

be left undisturbed, but in such localities, where their feeding grounds are capped by a broken rocky ridge, they may be approached when at rest there. The difficulties of approach are great, for a large herd on the lookout is not easy to circumvent; but a close approach is likely if the stalk is feasible at all, and the reward granted by the spectacle of the ibex in their true haunts is well worth the trouble.

The Tian Shan ibex, which is characterized by the greater length of its horns, and their tendency to turn out at the tips, as well as by its paler colour and white saddle, is very widely distributed. It is found practically everywhere. I have seen them on the western spurs overlooking the Russian Ferghana, and at the furthest eastern extremity, in the Hami or Karlik Tagh Mountains. There seems to be no doubt that the locality where they are most numerous and attain the greatest size is in the centre of the range around the culminating peaks, and where the rainfall is heaviest. Most sportsmen have obtained their heads in the Kok-su Valley and its vicinity. Owing to Russian regulations the country immediately around the huge mountain mass of Khan Tengri (24,000 feet) has not been open to Englishmen, so we do not know what it may contain in the way of big ibex. There are some ibex which grow very good horns in the ranges to the south of Narin, so I imagine that between there and Khan Tengri there may be some wonderful ibex grounds. There is plenty of room for them, here alone are two hundred miles of untouched country. North of Kuldja in the outlying groups of the Ala Tau ranges there are plenty of ibex, some tributaries of the Borotala being veritable strongholds of the wild goats. We know their horns run to 50 inches in this region, and suspect there are as good heads here as in the main Tian Shan. Out at the very extreme end of the eastern extension of the Tian Shan ibex of a good size are found; they even range on to the last hills overlooking the Desert of Gobi.

It is a general rule that the higher the habitat, the larger the horn growth. In the Tian Shan it is not always the highest ranges that have the heaviest rainfall and therefore the finest pastures, so one must look out for high, cold ranges with a good precipitation in order to be sure of finding ibex with the colossal horns which are their special characteristic. Ibex of 45 to 50 inches are very common in the centre of the range and quite ordinary in any part of the Tian Shan. The record heads of Himalayan ibex are of the size generally to be obtained by a good, hard worker in the Tian Shan. The hunter should get 53-inch to 55-inch horns if he is careful

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to spy, to learn how to pick out the long horns, and does not waste his chances on the hosts of average heads that are always to be shot. The actual record length of horn is 58 inches, shot by Colonel H. Appleton; there are several of 57 inches recorded by Messrs Rowland Ward in the new edition of "Big Game Measurements"; 53 to 54 inches seems to be the size of a fair average head which contents most hunters. They are all wonderful trophies to the man who has laboriously hunted ibex elsewhere in Asia; the Tian Shan certainly spoils one for anything else.

The wild sheep of the Tian Shan are more local in their distribution than the ibex, and, although always to be obtained, need more careful hunting and perhaps even call for more extensive journeys. In the main Tian Shan, to the south of Kuldja, they are to be found chiefly in the vicinity of Karagay Tash, at the head of the Kok-su Valley, where they inhabit a comparatively small, rather rugged country as compared with the majority of extensive plateau-like sheep grounds. Heads of a very good size exist there, however, and the sheep themselves are fairly numerous. Their main resort is the Yulduz Plateau, which lies on the southern side of the main water-parting, and which is reached from the Jirgalan Valley on the north by crossing the Jamby Pass and Karagay Tash Pass. From the south it is easily approached from Kuchar. This is a typical sheep country, composed of rolling, grassy downs at an average altitude of 9,000 to 10,000 feet. The surroundings and the habits of these sheep are very like those of the *Ovis poli* already described, to which they are closely allied. In fact, all the sheep grounds of the Tian Shan are very similar, and only differ from the Pamirs in that they are miniatures of those immense and high-lifted upland valleys.

The Yulduz or the Upper Kok-su districts should give the hunter the few trophies of wild-sheep that he desires, but it must be remembered that they are becoming more difficult to get, the chief reason being that the natives are advancing with their innumerable flocks on to what used to be uninhabited country, completely given over to wild game. The sheep do not here run in the big herds that gather on the more extensive plateaux to the west. The rams are generally to be seen in groups of five to ten individuals. They attain a good length, 55 inches being a very fair head and one often obtained; they run to as much as 58 inches in these localities, and one phenomenal head of 70 $\frac{3}{4}$ inches has been picked up. There are many other sheep grounds, some of a very extensive nature, in other parts of the Tian Shan, which a sportsman keen on sheep hunting would do well



OVIS LITTLEDALEI.



OVIS LITTLEDALEI.

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to visit. Before we shift our ground, however, a word must be said on the vexed question of the varieties of sheep found over this area. Generally speaking, the sheep of the Tian Shan are a small race of *Ovis poli*, their territory adjoins, and until quite recently actually overlapped. For these sheep which range over the mountains between the Pamirs, the Ala Tau and Karlik Tagh—an immense area—many distinctions have been made and several names given. The story of the juggling of their respective names does not demand notice here; it is sufficient to record that the most recent decision is that the main Tian Shan is inhabited by the race called *Ovis littledalei*; these are the sheep which all hunters shoot in the Yulduz neighbourhood, but which they very naturally call *Ovis karelini*, for the great Russian naturalist who first named this sheep intended this name to apply to that particular variety. The *Ovis littledalei* are supposed to be typical of the Central and Western Tian Shan, while *Ovis karelini* is to be relegated to the Ala Tau mountain system. How far these two varieties mingle and overlap is a subject of much discussion. There are typical types of what *Ovis karelini* is described as to be obtained in the Karlik Tagh, nearly a thousand miles to the east of Ala Tau. They are also to be found in the region of the Narin and Ak-sai, five hundred miles to the south-west, a district which Severtzoff described as inhabited by *Ovis poli*, so alike are the sheep of that region to those of the Pamirs! Compare the two varieties of horns picked up on the Ak-sai plateau, figured opposite page 144. According to Severtzoff, they belong to *Ovis karelini* and *Ovis poli*, the ranges of which here overlap. The *Ovis poli* of the Tian Shan have now been defined as *Ovis littledalei*, otherwise the distinction holds good. On the Yulduz, the typical home of *Ovis littledalei*, the same mixture of types is to be found. But in the Ala Tau and the far eastern Tian Shan the typical *Ovis karelini* seems to predominate. When sheep range over immense areas of mountains it is difficult to draw a line of demarcation between their variations. It is simpler to place the *Ovis karelini* as typical of the most northern and eastern section of the ground, and *Ovis littledalei* at the opposite extremity, and to own that the two types overlap in the centre.

As regards size and measurement, sheep horns of 50, 52, and 54 inches have been picked up in the Eastern Karlik Tagh, the very extremity of the range of the Tian Shan varieties. These were found by Sir Francis Younghusband in 1887. From more recent observations it is unlikely that such fine sheep are to be found there to-day. In the Upper

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Borotala Valley, the chief resort of the Ala Tau sheep, horns of $48\frac{1}{2}$, 49, $51\frac{1}{4}$ and 53 inches have been shot by Mr J. H. Miller, the only British sportsman to hunt there. A picked-up head from that region taped $60\frac{1}{2}$ inches. On the Yulduz and Kok-su grounds, where more sheep-hunting has been done than anywhere else, larger heads have been obtained, probably owing to the very reason that it has been well searched. It does not follow that this region produces especially large heads, in fact, if I were in search of something with a big horn measurement, I would go to the largest and finest sheep ground, namely in the Narin districts to the south-west.

On the Central Tian Shan, south of Kuldja, heads of 58 inches have been got, and 55 inches is a fairly common size. Anything over 50 inches in length makes a worthy trophy of the Tian Shan variety. On the Ak-sai Plateau, 50-inch horns on shot specimens and 54 inches on "picked-up" heads are on record. Further away still on the western portion of the Tian Shan, such as in the Son Kul and Alexandrovski ranges, all the sheep run smaller in size and in horn measurement.

As regards these other sheep grounds, the mention of them brings forward the possibility of planning journeys and programmes other than the now somewhat hackneyed trip to the Kuldja district.

The traveller may prefer to work his way thither through the mountains with caravan and pack-horse, instead of "posting" along the monotonous plains. He may decide to visit and hunt systematically the almost untrodden ranges of the Ala Tau, or to explore the further mountain chains which run out eastwards towards Mongolia. The Western or Russian Tian Shan holds out great possibilities, if ever the English hunter is permitted to travel there. Some six years ago I was lucky enough to make a reconnaissance of the extreme south-western corner, where the Tian Shan runs southwards and joins the Pamir mass. My observations prove what a wonderful hunting ground here lies undisturbed. The region is a plateau land of great extent merging northwards into typical Tian Shan scenery of big valleys, forested ridges, rocks and eternal snows. The main valley is the Narin or the head waters of the great Syr Daria, which flows into the Sea of Aral; south of this are the Arpa and Ak-sai plateaux where rise waters which eventually drain into the desolate Lob Nor in the heart of the deserts of Chinese Turkestan. Eastwards rise the spurs and ridges which eventually culminate in the gigantic mass of Khan Tengri. Here we have a plateau-valley which is typically Pamir, with its immense herds of wild sheep; we have also the heavily forested At-bashi and Upper Narin



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OVIS LITTLEDALEI.

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valleys where roe and stag abound; every ridge has its herds of ibex—the Atbashi range being notably good stalking ground. The western declivities of Khan Tengri contain another resort of wild sheep, and those fastnesses should contain ibex as big as any in Kok-su.

A programme made with the intention of visiting these districts should be planned so as to enter from the west. Andijan, at the head of the Russian Central Asian Railway, in the Ferghana, is a good starting point, and easily reached in nine days from England. Caravan and men should be here engaged permanently. The road thence will lead eastwards to Osh, Usgent and over the Ferghana Mountains by either the Yassi or the Sur-tash Pass on to the Arpa Plateau. Ten days' trek from rail-head will take one past Chatir Kul on to the Ak-sai Plateau. All this region averages about 11,000 feet in altitude; it is typical plateau pasture-land, tenanted in certain seasons by Kirghiz. On the south lie the Kashgar ranges and further east the Kok-kia and Kok-shal—all good sheep country, and of vast extent. A couple of months could be easily spent in hunting this district alone. North of the plateau rises the At-bashi range, where I know ibex of 50 inches and 52 inches have been shot. Eastwards, by crossing a low col, the Upper At-bashi valley is entered, and here for the first time the traveller from the west will be introduced to the typical Tian Shan scenery of forest and meadow and high snow peaks. I have not followed this valley up, but it looked perfect game country; a Cossack guard showed me roe and wapiti horns from the vicinity, and I am of opinion that a large extent of wild country, worthy of an expedition, lies in that direction.

The next valley to the north, namely the Narin, is another likely place, especially if the head waters are visited, and from there a voyage of exploration be made to the upper sources of the Sarz-Jas, on the flanks of Khan Tengri. Severtzoff speaks of the high plains at the sources of the Kar-kara, the Sarz-Jas and Tekkes as being frequented by large herds of sheep, and the ibex are sure to run large in such an Alpine region.

Belonging also to a programme of sport in the Russian Tian Shan is a trial of the Son Kul district, the Tolas and Alexandrovsky Mountains. It is chiefly the sheep of the Son Kul and Alexandrovsky ranges that would attract a hunter to that district. There is little known about them; Severtzoff named them as a distinct variety, but we have learnt nothing since.

An alternative to the Tekkes and Kok-su shooting grounds for hunters who make their base at Kuldja is the mountainous region to the north

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and north-west of that town. This forms a separate but quite self-contained expedition. It might be planned so as to form a portion of an extended journey to the Altai Mountains, or it might be worked in with a shoot in the Central Tian Shan. Its chief asset is its sheep ground, but it also supports innumerable valleys full of ibex; there are stag, roe, bear, and pig. It has not been hunted and therefore may hold out as good prospects as the well-known Tekkes district.

The Ala Tau, together with the subsidiary range—the Boro-Koro—by which it joins on to the true Tian Shan, is in itself a large tract of country. The whole of it, except the northern slopes of the Ala Tau, is in Chinese territory, and therefore free country to anyone who comes to Kuldja to shoot. The Russian side possesses the largest forests, and there may be more stags there, but against this is the close vicinity of many Russian settlements. Generally speaking, the Chinese territory will provide all that the hunter wishes. A journey of five to six days, at caravan pace, will take a traveller over the Talki Pass, and round the beautiful Lake of Sairam Nor to the Borotala Valley, which should form his headquarters. This region is a Kalmuk “reserve,” and they must be relied upon as guides and hunters, unless one is fortunate enough to have brought along a Kirghiz or Kalmuk hunter from the Tian Shan, for the Borotala natives are in no way worthy of the title “shikari.” The upper portion of the Borotala Valley is a beautiful region of grassy downland, backed by rock and shale ridges. It was here that Mr J. H. Miller obtained his fine heads of *Ovis karelini*, and judging by the numbers we saw in a short time it is not too much to suppose that fine heads still remain to be shot. Ibex, roe, and wild boar were also shot in the main Borotala Valley at an average altitude of 8,000 feet. The wild boar were of the variety known as *Sus scrofa nigripes*, and inhabited the jungle of dwarf birch along the banks of the river at a high altitude. Ibex are found on the north side of the valley, but are scarcely worth hunting there, for a veritable stronghold of wild goats exists in the Urta Saryk valley, a right affluent of the Borotala. In its lower portion the Urta Saryk is heavily forested; the wapiti are probably not worth following here, as still larger grounds exist on the main Ala Tau, but there is always a chance at roe and bears. Higher up the valley develops into perfect ibex ground, and enormous numbers exist on both northern and southern slopes.

Altogether there is much game in the district, and a considerable time could be spent in its pursuit. For instance, the outlying Kanjik ridge, to



ARPA PLATEAU IN THE WESTERN TIAN SHAN.



KOK KIA SHEEP-GROUND.

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the north-east of Sairam Nor, which is of no altitude and does not form much of a retreat, is inhabited by wild sheep. On the barren sheep country on the southern slopes of the Ala Tau, I have seen good-sized wapiti, refugees, maybe, from the hunted forests on the northern slopes.

Whilst in the locality an expedition should be made towards the north-east, where an isolated group of mountains exists which are the home of a peculiar variety of wild sheep—*Ovis sairensis*. The area it inhabits is composed of the Barlik and Maili ranges, besides the Sair and probably the jumble of mountains to its south, such as the Urkashar and Jair uplifts.

We have seen old horns as far east as the Naryn Kara range to the north of Ulungur Lake, and they are fairly numerous in some very difficult country which immediately overlooks the depression containing the lakes of Ebi Nor and Ala Kul. This country is only five days' journey from the Borotala. In summer it is a pleasant region of undulating grassy hills, featureless as a whole, but very broken in detail, and the hunting of wild sheep in such a locality is exasperating work. The altitude is not high, and it may be that large heads do not exist there. The Chagan-oba and Dzusau ranges are more likely places, but they are rather overrun by nomads, large encampments of Kirghiz spending the summer in the Upper Kosho Valley.

The Sair Mountains, where Mr St. George Littledale first obtained his type specimen, can be reached in about a week's trek, and it is all on the road should the traveller be making for the Altai hunting grounds.

The *Ovis sairensis* is a smaller sheep than the *karelini* of the Ala Tau, with horns more of the *ammon* type, being thick and well curled, without a wide spread. The largest known head is 47½ inches. There is much to be learnt with regard to this sheep, which seems to be intermediate in type between the *ammon* and the *poli*. Knowledge of its range and habits are both needed.

The remainder of the Tian Shan is made up of the very high and impregnable country to the east of the Yulduz at the head of the Manas River. So far as I know no sportsman has tried this ground. We know from our own observations that wild-sheep exist, in winter, on the low foothills at the northern base of the range in the vicinity of Shi-Kho; apparently they are also found in the same low type of country on the southern foothills as well. These may be wanderers from more permanent abodes in the heart of the mountains, or they may be the remnant of once numerous colonies which permanently inhabited the low country. There is certainly

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fine stag and ibex ground in the upper valleys of the Manas River. It is, however, very difficult country to approach and calls for a specially arranged outfit. East of this again is the Bogdo-ola group which, being sparsely inhabited, might be worth hunting for stag. There is a famous reserve in the valley containing the lake of Bogdo-ola which, on account of religious scruples, is preserved, no game being allowed to be killed. Here we saw traces of the presence of much game.

Should any hunter be tempted to travel as far as the ranges east of the Bogdo-ola, he will find wild sheep in numbers on the plateau country between this range and Bar Kul. In the spring season he will also meet with "kulon" or wild ass, and gazelle innumerable, for they then come up from the surrounding deserts to feed on the new grass. On the Bar Kul and Karlik Tagh ranges are sheep, ibex and stag, all of them worth hunting should the traveller pass this way, but scarcely worth following whilst they still remain so numerous in localities more easily reached.

I have spent some time in describing the various shooting grounds of the Tian Shan, with special regard to the wild sheep, ibex and wapiti, for they indeed are the prizes which tempt the hunter hither. The roe deer are also well worthy of notice, for they attain magnificent proportions, but these are dealt with elsewhere. They range, so far as I can gather, wherever the forest belt extends.

Besides these trophies, there may fall to the rifle of hard-hunting sportsmen bear, snow leopard, and wild boar. Snow leopard, it is true, is somewhat of a chance, for it is not a beast one can hunt systematically, but they are very numerous in the high rock country inhabited by the ibex.

The bears of the Tian Shan are sure to be seen at some moment or other. They are very much in evidence in spring and early summer.

It has been said that there are two types of bears on the Tian Shan range, a dark coloured, forest loving species, and the other a paler variety, found on the high treeless plateaux. More recent opinions seem to decide that these are only local varieties of one type; all agree, however, in the peculiarity of having white claws. It is closely allied to the Kashmir brown bear and is called *Ursus arctus leuconyx*.

BOKHARA

The remainder of mountainous Central Asia is occupied by the Khanate of Bokhara and the adjacent district of the Zarafshan. No part of Inner



THE UPPER BOROTALA AND ALA TAU MOUNTAINS.

PLATE LXI.

CENTRAL ASIA

Asia is less known to English sportsmen, and although it may be said with fair certainty that it does not hold out great opportunities for sport, it is a delightful country and offers a wide field for researches into the natural history of the few rare beasts that inhabit it. No one knows, for instance, how far the *Ovis poli* range into Eastern Bokhara, no one has shot what must prove to be a new variety of markhor which inhabits the hills bordering the Oxus on the north in the neighbourhood of Kuliab. The stag of the Oxus Valley is known only by name, and the wild sheep of the outlying spurs of the Hissar Mountains is only just beginning to find its right place in the list of Asiatic sheep.

Bokhara is easily reached by the Central Asia Railway, but permission to leave the railway and travel freely in the interior is most difficult to obtain, while the mountainous region bordering the Oxus and the Pamirs is always forbidden ground. Should, by any chance, a permit be obtained, there should be no doubt as to the country which calls for special investigation. The mountains bordering the Zarafschan River on north and south may be discounted as they are only inhabited by small ibex and bears; it is the Upper Oxus Valley and the western declivities of the Pamirs, in the districts of Darwaz and Shinghan, that the real interest lies. In the Oxus Valley above Termez there are some out of the way localities where wild pig, stag and tiger abound. The latter alone are well worth a journey, which should be made in winter, for then alone is there any chance of success. The stag of the Oxus Valley is confined to the jungles which margin the river, its habits and environment corresponding to those of the Yarkand stag, of which we know a great deal more than we do of the *Cervus bactrianus*. I know this stag to be numerous on the course of the river east of the point where the Vaksh enters it. The Oxus here runs in many channels, the islands being covered with thickets and jungles. It is a wild locality, uninhabited, and impenetrable for the greater portion of the year. Further up the valley the stags roam as far as Kulab; beyond this the mountains hem in the river and allow no suitable ground. Whether or not these deer extend the whole length of the Oxus as far as the Sea of Aral I cannot say. Severtzoff mentions finding such a beast on the lower course of the Syr Daria, which I imagine must have been of this variety.

In the same locality inhabited by the Bokharan stags, tigers are fairly numerous. These we know range the whole course of the Oxus from the Sea of Aral to the foot of the mountains near Kulab. They are seldom hunted or seen. I have good reason to believe they wander across the desert

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from the Oxus to the lower Zarafschan. The natives speak of them, and I am certain I heard one one night in the saxaul forests which surround the swamps where the river loses itself in the sands, and where large numbers of wild pig roam.

The prize which Eastern Bokhara holds out to the lucky sportsman who gets there, is a markhor of doubtless new variety which inhabits the right bank of the Oxus in the district of Baljuan. Mr W. R. Rickmers, who has proved its existence, says that it seems to prefer the low rough country on the edge of high mountains instead of the inaccessible heights of the giant ranges of Darwaz.

The only other hill game is a wild sheep which is restricted to the most outlying desert hills of this mountain world. It is strange that one has to pass over wild mountain country to find it destitute of game, except a few ibex; and then to discover that the low spurs, without much grazing and offering rather cramped surrounds, are the home of an exceedingly beautiful little wild sheep. But such is the case. On the Nurata Dagħ, an almost isolated ridge, which runs out into the Bokharan desert of Kara Kum to the north-west of Samarkand, I found a sheep which I concluded must be identical with a similar type discovered by Severtzoff in the Kara Tau, another more or less desert range, 200 miles to the north. This sheep he called *Ovis nigrimontana*, and we only knew of it from his description. Recently, however, additional material has enabled Russian zoologists to draw a distinction between the sheep of the Kara Tau, and my Bokharian specimens. Whereas the true *Ovis nigrimontana* approximates to the "argali" type, my sheep—of smaller size and with bigger neck ruff—approaches the urial type. It might be said to connect the *Ovis vignei arkal* of Northern Persia with the larger "argali" types of Central Asia. It is a small sheep with a 4-inch long neck ruff and a comparatively big horn measurement, my best head measuring $35\frac{3}{4}$ inches in length, $10\frac{1}{2}$ inches in girth and with a 24-inch span.

Both the Kara Tau and the Nurata Dagħ are easily reached from the railway. The former range runs parallel to the Orenburg-Tashkent line, about fifty miles away from it. Severtzoff describes it as a rugged locality, with fine grass-covered uplands and meadows above the ravines and precipices; there are also larch, apple and ash groves. The sheep inhabit the highest crags and the lowest foothills, after the habit of all wild sheep which live at a comparatively low altitude. Like the mouflon of Asia Minor, they are to be found on hills only a few hundred feet above the surrounding



THE MURATA DAGH. The haunt of the Bokharan wild-sheep.



BOKHARAN WILD-SHEEP (*Ovis severtzovi*).

PLATE LXII.

CENTRAL ASIA

steppes, actually descending at times on to the plain to feed on the salt plants, and they also exist on the highest pinnacles. In this range the summits are about 4,000 feet above the sea.

The Nurata Dagh is a ridge about a hundred miles long, with a long, easy, featureless slope on the south, and a steep, sharply inclined northern face, well broken by ravines. A string of little villages extends along the foot of the northern slope. It was by this route that I went in the winter of 1908 from the station of Djesak, and after hunting the range to its extremity returned by way of Nurata and Katti Kurgan. The sheep existed on the further half of the range alone, being found in twos and threes, as well as in herds of a dozen or more. The old ram, which I shot, and is here pictured, was a solitary beast. Owing to the presence of native shepherds and their flocks they are very wary of man, never allowing a close approach, but being quite unmoved by the appearance of shepherds and flocks so long as they are in full view at a safe distance. Their refuge is in the ruggedness of the escarpments, not in high altitude or huge areas of rolling country. There is no portion of their habitat which is more than 2,000 feet above the plain.

In connexion with these desert ranges, which are such a feature of the great Asiatic steppe, mention should be made of two other localities where wild sheep exist, but where no English hunter has ventured. On the eastern shores of the Caspian Sea is an arid bit of country called the Ust Yurt Plateau, where roam small bands of sheep of the "arkal" type, identical, no doubt, with the *Ovis vignei arkal* of the Kopet Dagh on the Persian frontier. Away to the east in the Province of Akmolinsk, where Southern Siberia merges into Turkestan, there are many groups of hills where sheep exist. Whether they are of the variety that inhabits the Kara Tau, on the west, or whether they belong to the Sair varieties which approach on the east, we cannot say. They may be either, or perhaps form another intermediate variety.

This district is most easily reached from the Siberian Railway by the post road from Omsk direct to the towns of Akmolinsk or Karkaralinsk. The latter is perhaps better approached from Semipolatsk, which is only a few days' journey away by post road. The steppe is here characterized by innumerable isolated groups of hills, rising to 5,000 feet, where the sheep live.

Having reviewed the mountain game and hunting grounds of Inner Asia, we are now confronted by immeasurable plains which occupy the

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remainder of the region, and, indeed, make up two-thirds of the whole. The mountain area is but a trifle compared with the steppe and desert zone, yet the highlands are the game resorts, the list of plain-loving animals being a meagre one.

Looking at the map we see that the Tian Shan, the Pamirs and Bokhara are bordered on the north by endless plains which reach from the Caspian Sea to Siberia and to the Chinese Gobi Desert. Of one type, character and climate, for the most part, they contain practically the same fauna throughout their entire area. Gazelle of many closely-allied varieties range the whole of this zone, wild asses are found in the wilder parts, stag in the jungles that border big rivers, a few tigers in the same environment, and the strange saiga on the northern border. This is the entire list, with the exception of the inevitable wild pig and the problematic wild camels in the Tarim Deserts.

The peculiarity of the region is that whether it is low-lying sandy desert or high plateau steppe the fauna is the same. The wild asses, for instance, live in the lowest depression, a few hundred feet above the level of the sea, and at 10,000 to 11,000 feet on the Tibetan Plateau.

Gazelle, too, live at all sorts of altitudes. The saiga is the most constricted in its range, although recent information shows that it extends a long way east. This strange animal, which is typical of the Russian steppes, is found throughout the Balkash region and on the Dzungarian plains as far east as Barkul on the western confines of Mongolia. Here it is hunted, for the sake of its horns, by natives who come for the purpose from Chinese Turkestan. It is a beast of peculiar habits and affords much interest to the hunter. Its home is in the heart of the steppes, and there it remains all the year, except for summer migrations in search of food. This is the hunter's chance, for when the lower country begins to get dried up the saiga move up into the foothills of the surrounding ranges, where fresh grass is always to be found. During these movements they collect into great herds and are apparently easily taken in. With a knowledge of the country and an ability to endure the heat, a hunter would have every chance of bringing one of these rare beasts to bag. At early dawn they are always on the move to feed on the rising ground, later in the day they retire to the open steppe, where pursuit is out of the question. At well-known feeding grounds and at water-holes lie the hunter's opportunity. He must wait for the saiga to approach him, and make no attempt to come to terms until he has caught him in undulating country, where a quick, short stalk is possible.



Photo by]

[Mr J. H. Miller.

THE "KULON" OR WILD-ASS OF CENTRAL ASIA.
A domesticated specimen.



Photo by]

[Mr J. H. Miller.

GAZELLA SUBGATTUROSA.

PLATE LXIII.

CENTRAL ASIA

The gazelles of Inner Asia are a study in themselves, so much do they vary in the different localities. The steppes of Russian Turkestan, of Southern Siberia, of Dzungaria and Chinese Turkestan are inhabited by one type—the *Gazella subgutturosa*, or goitred gazelle. Broadly speaking, this type can be divided into three fairly well pronounced varieties, according to their geographical distribution. In the west, throughout Transcaspia and Russian Turkestan, is the typical *subgutturosa*; in Dzungaria, about the centre of its range, is a slightly larger form named *sairensis*; it is presumed that the gazelle of the Southern Gobi belongs to this variety and not the Chinese Turkestan race, which is distinguished as *Gazella yarcandensis*. They are all more or less the same size, averaging about 27 to 28 inches at the shoulder, and are distinguished from other Asiatic gazelle by having long black tails. The horns average about 13 to 14 inches in length, the record length for the western and Dzungarian races being 15½ inches, while those from the Tarim basin run to 17 inches.*

During an expedition into Central Asia, the hunter is sure to come upon gazelle at some place or other. It is generally where they are least expected that they turn up, for one is always told that there are *jeran* in numbers on every bit of plain one crosses, but they are seldom or never seen. Success with the gazelle depends almost entirely upon the season. In mid-summer they may be got with certainty if trouble is taken to visit some isolated water-hole in the heart of the desert. This is a laborious and often unpleasant task, but it is the only way to make certain of finding them during the hot months. In spring they are on the move to the foothills and rising ground that fringe the plain. The new grass attracts them in great numbers. The knowledge of a locality where the first spring grass comes up is sure to result in plenty of sport with gazelle. For instance, where the low Bokharian steppes rise to meet the first foothills of the mountain area, such as in the neighbourhood of Karshi and the Nurata Dag, the early spring first makes itself felt and the gazelle come in troops to feed on the young grass.

Away at the eastern limit of the range of this species, on the rolling plateau to the west of Barkul, we have seen gazelle in hundreds in the month of April. This was at an altitude of 7,000 feet above the sea. In Chinese Turkestan the gazelle approach close to cultivation at the foot of the mountains. They can generally be out-manœuvred by careful driving.

In the winter the gazelle retreat to the lowest portions of the plains,

* See Rowland Ward's *Records of Big Game*, 1914 edition.

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which are as often as not covered with saxaul and tamarisk jungle. This seems to attract them, for they are found in such vegetation even if it is not at a very low altitude; it probably supplies food and warmth in a region which in winter imposes the greatest hardships of hunger and cold. In Southern Dzungaria I have seen gazelle in great numbers during the month of January, crowded into tamarisk-covered areas, even close to villages and nomad encampments. They become quite foolish, not being able to see any distance, and on being disturbed move slowly in wide circles.

Although the gazelle may be chanced upon by any hunter covering a large extent of the plains in the right season, the wild ass, or kulon, is unlikely to be seen unless a special attempt is made. Considering the trouble this entails, it is unlikely that anyone would do so except for scientific purposes. The kulon is a rare animal, excessively wild and lives in very difficult country. Featureless plains, bitterly cold in winter, waterless and sunbaked in summer, are its habitat. The kulon ranges from Transcaspia to Balkash and through Dzungaria to the edge of the Gobi. We have seen them at the lowest elevation in the heart of the continent, and at 7,000 to 8,000 feet above the sea, in localities not very far distant from each other.

These allusions to the arid types of Central Asian fauna might lead the reader to suppose that all is desert, but, as a matter of fact, the great sterility of the plains is often relieved by the presence of big rivers, which are responsible for considerable areas of forest and jungle. The chief of these are the Oxus, the Syr Daria, the Ili, the Manas and the Tarim. All are of the same type—great waterways flowing slowly across the barren plains to their final home in self-contained basins, where they are doomed to evaporation. Forests of poplars, dwarf oak and tamarisk, jungles of thorn scrub and tall reeds margin the banks. On the Oxus and Syr Daria we have seen that a peculiar stag has its haunts. On the upper tributaries of the Tarim, of Chinese Turkestan, another stag of the same type lives—*Cervus cashmirianus yarcandensis*, an ally of the barasingha of Kashmir. The Yarkand stag, as it is called—for the Yarkand River was the first locality where it was discovered—is found on the lower courses of the Kashgar, Yarkand and Khotan Rivers, and on the main Tarim.

These stags are fairly numerous, but very difficult to hunt; in summer the denseness of the vegetation and the myriads of mosquitoes form almost insurmountable obstacles; while during the winter it is said that the ground is very difficult on account of dead leaves and the frozen



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RECORD OVIS LITLEDALEI.

Length on outside curve $58\frac{1}{2}$ inches: Circumference $16\frac{3}{4}$ inches: Tip to tip 45 inches.

Shot by Mr E. W. Dixon

PLATE LXIV.

CENTRAL ASIA

surface. During the early winter, when the frost has killed much of the vegetation, and the stags are roaring—they begin in early October—should be the best chance.

I do not know that anyone has seriously hunted the stags at this season. Major Cumberland successfully hunted them on the Yarkand and Tarim in mid-winter. The natives, of course, are always after them in the summer when their horns are still soft—the worst season for hunting in many ways—whereas during the period when the stags are worth shooting from our point of view they are not so harassed.

A deer of the same type inhabits the jungles on the Manas River, a region far removed from the Tarim basin, but of like character. So far as we can judge the two are of the same variety, for no one has yet brought home a specimen to disprove it.

These same districts are haunted by a few tigers of the small Central Asian variety, which intergrades between the large Manchurian *mongolica* or *longipilis* and the *vigata* of Northern Persia. They are not to be seen easily in the low-lying jungles; but on the lower northern slopes of the Tian Shan they are probably more easy to get on terms with. In the Jirgalan Valley they are often reported, as well as on other tributaries of the Tekkes, such as the Kash and Kunges. Here they inhabit the hills up to 4,000 and 5,000 feet and live by preying on the herds of wild pig which abound in the scrub below the forest belt.

DOUGLAS CARRUTHERS.

CHINA

CHINA is so vast a country, travel in the interior so difficult and uncertain, information with regard to its fauna, until recently, so vague, and the incursion of foreigners so long discouraged, that there is little wonder it should remain, from the point of view of the big game hunter, the least known of all countries. Yet it is possible to obtain within the confines of the Middle Kingdom a selection of heads which for variety and interest will compare favourably with those from any quarter of the globe. The modern Chinaman of the cities takes but little interest in hunting, though Marco Polo tells us of the manner of the Grand Khan's proceedings in the chase, and the existence of game laws prohibiting every person throughout all countries owning his authority "from daring to kill hares, roebucks, fallow deer, stags or other animals of that kind, or any large birds, between the months of March and October." Hunting parks, such as that in which the exiled Manchu Court is at present confined, existed, and we read of lions (tigers), bears, lynxes, antelopes, musk deer, leopards, beyamini (yak), and wild pig being plentiful throughout the country. All these exist at the present day as well as other varieties, such as burhel, serow and goral, whilst it is by no means improbable that new species may be discovered as the country becomes better known. All game, with the exception of such animals as the roe and smaller varieties of deer, wolves, leopards, etc., are confined to the mountainous regions which it is impossible to cultivate. The Chinese may be described as a nation of crofters. They cultivate every inch of ground which is capable of cultivation. Consequently the foreigner who visits their country in quest of sport must be prepared to find large districts entirely destitute of game. Roads are bad and not too plentiful; travel on them by no means an unmixed blessing; tents an impossibility, save when actually in the haunts of the game, whilst the hospitality of Chinese inns in the more outlying districts is sufficient to try the senses of any traveller pretty severely, save one who has become inured by custom.

Food is plentiful and cheap, and those who are content to live in the country can thereby materially reduce expenses. I have gone fully into this question in my book, "The Big Game of Central and Western China" (Murray). It will be sufficient here to state that £100 per month will amply cover all expenses for a single sportsman after arrival at Shanghai. This

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allows for many luxuries and comforts; an additional £30 per month will provide for a second person. There is one indispensable adjunct for a successful trip of some months' duration into the interior. This is a reliable interpreter. Such men are hard to find. Many natives would probably agree to any conditions imposed at the coast; once away from the railway and civilization, unless differing considerably from any Chinaman I met, they would develop into a source of endless trouble and worry to their unfortunate employer, or, abruptly flitting, leave him to the tender mercies of their countrymen. The demand for white hunters in China has not yet produced such a supply as is to be found in British East Africa, nor is it ever likely to do so. If a man of this description can be found, who talks the language fluently and understands the natives, he would, in the end, save money and add materially to the success of the trip. £60 per month would be about the usual charge. The sportsman who visits China intent on big game shooting must be prepared for a good deal of hard work. Such animals as the takin, wapiti, serow and burhel are not to be secured without some pretty stiff climbing, in some cases over very rough country. He should have plenty of time at his disposal, for things cannot be hurried, and he will want all his available stock of patience. A small but select bag should content him, for there is none of the six-or-seven-species-a-day business as there is in East Africa. If he works hard and uses discrimination, he should, however, secure some most interesting and rare trophies, whilst it is quite likely that the man who is content to break fresh ground may immortalize his name by the discovery of a new species.

I used a '275 Rigby-Mausser (pointed bullets), a '350 Magnum (ditto), and a 12-bore shot gun. However, I have no wish to cram my pet weapons down anyone's throat, and as any rifles of this description, by a good maker, would do equally well, I will say no more about them. It is not easy to get cartridges in China, and it really saves trouble in the long run to send them on ahead to Shanghai, or some other port. The Chinese in the interior, especially away from the main provincial centres, are a pleasant enough lot to deal with. They are curious and inquisitive, but quite friendly. The attitude of Chinese towards foreigners generally has undergone a very radical change since the Boxer rising of 1900, and we never experienced any real trouble.

In the following pages I shall not deal with the game birds of China, as the subject is altogether distinct from that of the larger mammals. Pheasants, however, are very abundant, and during the autumn months

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can generally be relied on for a meal. In the neighbourhood of the big rivers wild fowl are plentiful, so the traveller is not often compelled to go hungry.

With regard to the best season for hunting in China, takin may be shot at any time. They move to very high ground in the summer months, which is an advantage in one sense, as it allows the hunter to spy his game beforehand. In the winter they are lower, and though the weather is often severe, so much climbing is not entailed.

Wapiti are best hunted in the rutting season, as the stags can then be located by their roars.

In the summer months the thick vegetation renders roe stalking a matter of great difficulty, as it is very hard to locate the game. The dry grass and frozen snow is a drawback in the autumn and winter months, but on the whole the chances of success are greater than earlier in the year. Burhel can be hunted at any time except when deep snow precludes their pursuit. They descend lower in the winter, but probably September and October is as good a time as any.

The summer and autumn months are the best time for goral and serow, as these are usually pursued with dogs, and the animals can be driven from the undergrowth to which they retire during the heat of the day.

There are few books dealing with the large fauna to be found in China. Fergusson, in "Adventure, Sport and Travel on the Thibetan Steppes," devotes four chapters to shooting in Szechuan; the title of Mr Wade's book, "With Boat and Gun in the Yangtze Valley," aptly describes its contents, as big game, with the exception of some of the smaller varieties of river deer and pig, do not come within its scope; and Mr A. E. Leatham, in "Sport in Five Continents," gives three chapters to China, though he does not penetrate beyond Ichang. The only work which aims at being at all comprehensive in addition to my own is the recently published "A Naturalist in Western China," by Mr E. H. Wilson. In this, two chapters deal with the birds and two with the mammals.

Too much reliance should not be placed on native names, though I give them, as the same name may be applied to different animals in different localities. In Szechuan, for instance, the natives call the burhel *pan-yang*, a term which the inhabitants of Shensi apply to the takin. This latter animal is called by the natives of Kansu and Szechuan *yienu*, and the burhel in Kansu is known as '*ngaiyang*'.

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Tigers (*Felis tigris*), native name, *Lao-hu*, are scattered throughout the country, but are hard to get. I have seen skins and skulls for sale at Hankow which I was told were obtained in Hupeh. Chang-yang and Patung are said to be favourite districts for these animals. In West Szechuan they are occasionally found near the sacred Wa-shan, and in the Chiench'ang Valley, and southwards into Yunnan they become commoner and increase in size. The Hupeh tiger is rather small. Tigers are also found in the province of Fukien. Near Amoy a company of seven Chinamen have the monopoly, which they have inherited, of killing tigers. The country is composed of large black granite boulders which, in many instances, have fallen together in such a way as to form caves. In these tigers and leopards are found. The Chinese kill them with three-pronged spears, after smoking them out, and they have been shot by a few Europeans. Tigers are also found within two days' journey of Foo-chow, and in the provinces of Hunan, Kweichou, and Kwangsi. In Szechuan, though, as I have already said, they are to be met with in the jungle around Wa-shan, they are rare.

Speaking generally, tigers in China are found at comparatively low altitudes, are thinly scattered through the warmer districts, and are nowhere easy to get.

In the north the Manchurian tiger (*F. t. mongolica*) provides the finest and most imposing member of the *felidæ* which can fall to a sportsman's rifle.

Leopards (*Felis pardus*), native name, *Lao-patsze*, are widely distributed and are captured by the natives in log-traps and in bamboo nooses. They are particularly abundant in Yunnan and Kweichou, but are nowhere easy to shoot. Two races are distinguished in Hupeh: *F. p. variegata*, a lowland variety, darker, redder and with a thinner tail than *F. p. fontanieri*, found on the higher ground, up to 11,000 feet and more. This latter animal is smaller, paler in colouring and with a bushier tail than that found from the coast westward to the neighbourhood of Ichang. I have found their tracks in Kansu at a height of 11,000 feet when after roe deer. It is hardly necessary to add that the roe were conspicuous, as every other kind of game, by their absence.

Snow leopard (*Felis uncia*), native name, *Hsueh-pao-tsze*, do not inhabit China proper, though skins can often be purchased in Cheng-tu, Chungking and towns on the Tibetan border. They are brought in from Tibet.

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Clouded Leopard (*Felis nebulosa*), native name, *Kwei-ko-pao*, are found in Yunnan and Kweichow.

The Lynx (*Felis lynx*) is found on the Chinese-Tibetan borderland, and its handsome skin commands a ready sale among the Chinese. Large numbers of skins are imported from America and make very beautiful robes.

The lesser varieties of cats are legion, and many different kinds may be distinguished in the fur and pawnshops of the larger Chinese towns. The following have been recognized:

Chinese Marbled cat (*Felis scripta*).

Chinese Jungle cat (*Felis pallida*).

Asiatic Ocelot (*Felis tristis*).

Leopard cat (*Felis bengalensis*).

A small and vicious tabby cat (*Felis ingrami*), found in West Hupeh.

Civet cats are common all over the warmer parts of Central and Western China.

The Panda (*Aelurus fulgens styani*), native name, *Chu-chieh-liang*, is one of the most richly and beautifully marked creatures to be found. It is rare in Szechuan but commoner in Yunnan.

“In the shape of its head, short, broad face, and short ears this animal is very catlike; the claws, too, are partially retractile. The limbs are short and stout; the soles of the feet furry; the tail is 16 to 18 inches long, stout, cylindrical, and ringed at intervals like a civet cat. The fur is long, soft, rich, dark, ferruginous on back, shoulders, and flanks; underparts black; claws white; soles of feet, greyish; forehead, chestnut with rufous stripe running down from the eye to near the snout; face, lips, edges and inner surface of ears, white; outer surface of ears, dark red.” (“A Naturalist in Western China.”)

It ranges from 38 to 44 inches tip to tip and weighs 9 to 10 lb.

The Giant Panda or parti-coloured bear (*Ailuropus melanoleucus*), native name, *Peh-hsiung*, was discovered by Père David in Mupin (1869). M. Berezovski met with it again 1892-4 on the Kansu-Szechuan borders. No foreigner has yet been so fortunate as to kill one. “It ranges from the vicinity of Wa-shan westward to the forests beyond Tachienlu, northwards to Sung-pan and thence eastwards through the high mountains to the

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vicinity of Lungan-fu. It is essentially a denizen of the bamboo jungles between 6,000 and 11,000 feet, feeding on the young shoots of these plants."

The ears, shoulders and legs are black. Black rings surround the eyes, giving the appearance of spectacles. The rest of the body is creamy white. Tail short, soles of feet hairy. Fur of coat, long, glossy, soft and handsome. In appearance it is very like a bear. It is rarely killed by natives, and occasionally captured in a dead fall. It hibernates for six or seven months, is a solitary animal, frequenting the same haunts for long, and making beaten tracks through the forest. An adult specimen measures 4 to 5 feet and weighs about 200 lb.

There is some confusion as regards the bears found in China.

The natives of Kansu distinguish:

Ma-hsiung = Horse bear.

Ren-hsiung = Man bear.

Wha-hsiung = Piebald bear.

Go-hsiung = Dog bear.

Also *Do-coo*, a small black variety, said to be found in the T'e-pu country of the Tsinling Mountains.

Mr George Fenwick-Owen killed a specimen of the first-named species in the Minshan Mountains, Western Kansu, on October 20, 1911, which has not yet been designated scientifically.

The full measurements of this bear were as follows:

Length of body (nose to tip of tail—straight line) .	61 inches.
" " (following curves)	62 ..
Height at shoulder	40 ..
" hindquarters	36 ..
Girth of body (behind shoulder)	32 ..
" upper arm	17 ..
" fore arm	14½ ..
" fore paw	12 ..
" hind paw	10¾ ..
Length of fore leg	17½ ..
" hind leg	15 ..
" head to nape of neck	17 ..
" ear	5⅜ ..
Weight of skin (without scalp)	35 lb.
" head (uncleaned)	12 ..
Approximate total weight	242½ ..

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It was dark brown in colour, with a light patch on the withers and neck. A variety of the Himalayan black bear (*Ursus torquatus*) is found in Szechuan, and Mr Lydekker has distinguished another species shot by Major Malcolm M'Neill near Tachienlu in 1908 as *U. t. macneilli*. This bear is not uncommon in Western China and extends to North-Western Hupeh, and is fairly plentiful to the north between Singpan and Lungan-fu. Around Wa-shan and Litang it is common. The altitude at which it is found varies from 5,000 feet to about 10,000 feet. Starchy roots and fruits are its principal food.

Wolves are by no means uncommon in Central China and are plentiful on the grass lands of the Tibetan border. I saw a good many, particularly when crossing Sinkiang and the Gobi Desert, but never got a shot at one.

Wild dogs (native name, *Tsai-kou*, or *Tsai-gho*) are found in Western Szechuan and Kansu and quickly clear a district of game. They are rather larger than a fox, lankier, and rufous-grey in colour.

Foxes, racoon dogs, badgers, otters (these are used at Ichang for catching fish), marmots, and a variety of small fur-bearing animals are found throughout China, including the golden-haired monkey (*Rhinopithecus roxellanae*), fairly common in certain districts. As these, however, do not properly come under the designation of game animals, I will say no more about them.

The Takin (*Budorcas*; native name in Shensi and Kansu, *Panyang*; Szechuan, *Yienu*, or *Yehniu*). Several species are distinguished. With the typical form *Budorcas taxicolor* we have no concern, as it comes from Assam and Bhotan. *Budorcas bedfordi*, the variety found in Shensi, inhabits the Tsinling Minshan ranges, a practically continuous mountain chain running due east and west, from Chow-chih in the east to Li-hsien in the west. Due west of the westernmost extremity of the Tsinling Mountains there appears to be a gap, the Peshui River, as the upper reaches of the Kialing are called, being their boundary in this direction. They are said, though they have never been shot here by Europeans, to exist in the mountains of Northern Shansi, due west of Peking. Possibly these may be a distinct variety. They are known also in the neighbourhood of Piekou in Southern Kansu, and it is not unreasonable to suggest that this variety may be found eventually to be an intermediate type between *B. bedfordi* and *B.*

TAKIN ON THE HEIGHTS OF TAI PEI SHAN
From a Drawing by H. Frank Wallace.

PLATE LXV.



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tibetanus. Mr R. Kingdon Ward has found traces of takin in the neighbourhood of the Salween River. The natives call them *Yienu* and hunt them with crossbows and poisoned arrows. This variety has never been killed by a European, but it is probably closely allied to, if not identical with, *B. tibetanus* found in Western Szechuan and Eastern Tibet.

Few animals of recent years have aroused so much interest as this strange, uncouth-looking creature. It even holds its own in this respect with the okapi. Marco Polo alludes to "beyamini," "very wild and fierce animals," but he probably meant yak (*Bos grunniens*).

Père David, through native hunters, secured the first specimens in 1869 in Mupin. In 1893-4 M. Berezovski obtained takin from the natives on the Kansu-Szechuan border. These may possibly have been the Piekou variety, though I have no precise information on the subject. Two or three English sportsmen tried for the more southern form near Tachienlu without success until 1908. Mr C. H. Mears, I believe, claimed the honour of killing the first specimen. Mr Wilson in his recent book declares that his companion, Mr Walter R. Zappey, has the prior claim, having shot one on May 27 of this year, while Mr Mears' cow did not succumb until the 30th. In August, a few weeks later, Major M'Neill killed several in the petty state of Yatung. Mr Wilson, I think rightly, makes no mention of other claims. A certain gentleman, who shall be nameless, declared that he had been the first white man to shoot these animals. Possibly he may be correct if his assertion is taken literally, as I heard stories of dead takin, brought in by native hunters and potted as they lay in the yard! *Suppressio veri* with a vengeance. The Shensi takin (*B. bedfordi*), though skins were secured by the Duke of Bedford's expedition through native hunters, was not killed by a European until 1910, when Dr J. A. C. Smith shot one. Mr Fenwick-Owen and myself hunted them successfully in August, 1911.

Mr K. Horn has since killed them on the same ground as that on which we secured our specimens.

At the date of writing these are the only specimens shot by foreigners.

The Szechuan form is lighter in colour than the typical variety. It is yellow, thickly sprinkled with grey, particularly on the body and hind-quarters, with a blackish muzzle, ears and tail, a short, dark, spinal stripe and blackish or iron-grey legs. The Shensi takin (*B. bedfordi*), the most specialized representative of the genus yet discovered, is golden yellow and, to quote Mr R. I. Pocock, "the main character in which this Chinese

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animal deviates from the Assamese one is the extension of the pale coloration over the greater part of the head and its intensification everywhere." I quote the following notes from the lengthy description I gave of the animal in "The Big Game of Central and Western China":

"There is no dark spinal stripe, though its remains are found in a longer ridge of hairs, of a slightly darker tone than those of the body, approximating to those found on the necks of the males. It is interesting to note, however, that this dark dorsal stripe is very prominent in the young, varying in colour from dark grey to chocolate brown on the neck and tail. The young have also dark hairs round the fringe of the curiously shaped ears and a dark muzzle. The legs and hind-quarters are also considerably darker than in the adult. Even in the Szechuan variety the young are very materially darker than in adult specimens. The cows stand about forty-two inches at the shoulder, a full-grown bull about fifty-one inches. The legs are short, enormously thick and seem small in proportion to the body. The hoofs are large and very splayed. The hair is coarse. In sunlight they are a conspicuous golden yellow, though the females are considerably lighter and more silvery in tone, like the yellow in the coat of a polar bear. The bulls are much larger and have a decidedly reddish tinge about the neck, not unlike the colour of a lion. The back view of both sexes, owing to the length of hair, the formation of the hindquarters and comparative concealment of the short, broad tail, is absurdly like that of a Teddy bear. Much larger in size, they reminded me very strongly of the Rocky Mountain goat (*Oreamnus montanus*), both in their heavy build and apparently clumsy, lumbering gait. On occasions they can cover the rough ground on which they dwell with the agility of a rhinoceros. The head, normally, is carried low, the point of the muzzle being considerably below the line of the vertebræ. The eye sockets are prominent, close up to the horn, the curve of the nose decidedly semitic, and the nostrils large and well formed. The colour of the young is yellowish grey, shading to a darker tone, mingled with brown on the flanks. The belly is brown, the hair soft and fluffy; the hind legs dark grey, a lighter brown on the inside of the thigh. The upper part of the foreleg is dark grey; the lower part of the leg brownish yellow.

"According to the natives, those found to the south of Tai-pei-shan are much darker in colour and not so yellow, but there seems no reason why this should be so. They also say that the calves in their second year

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are black and white and gradually turn yellow. No doubt the latter part of the statement is correct. The rut takes place towards the latter end of July and the beginning of August. The calves, usually one at a birth, are dropped towards the end of March or early in April. The summer excreta resemble those of domestic cattle; the winter, ovoid, are like a deer's. They feed in the winter on bamboos and willows; in the summer on birch shoots, a kind of elm, grass and a strong-smelling herb with a yellow flower, a variety of *senecio*. When they descend, as they sometimes do if alarmed, into the bamboos they are very difficult to approach. Their pursuit under such conditions becomes very arduous in hot weather.

"In the winter they separate into small bands, but in summer collect and have been seen in herds of over a hundred. . . . When suspicious they give each other warning by a kind of hoarse cough, and during the rut utter a low bellow. The natives credit them with great ferocity. In the winter they are to be found among the dwarf bamboos which cover the hills at an altitude of seven or eight thousand feet. In summer they retreat further into the recesses of the mountains and spend their time on the rock-scattered slopes and battlemented crags which tower above the rhododendron groves and thickets of the Tsinling range. On being alarmed, unless badly frightened, they do not go very far, but stop at a little distance and begin feeding again. The old bulls are very cunning and always the hardest to approach when alone. They will lie with outstretched necks in the densest thickets and refuse to move until the hunter is almost on them. They are local in their habits, and will not wander far unless much disturbed. We saw two bulls on the same hillside, almost on the same spot, day after day.

"The horns of the old bulls do not harden into a solid central mass, but separate, and though tapering at the tips become worn and flattened in front. Those of the younger bulls are jammed close up against each other and are soft at their bases. When the horn growth is complete these harden and become more widely separated. Size of body is a just criterion to excellence of head. In other words, a big bull will almost certainly carry a big head; though the difference between a big head and a very big head is, in the case of the takin, only a matter of a few inches. The horns of the cows are considerably smaller than those of the bulls."

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With regard to their ferocity, I saw a hunter with a nasty scar which he said was made by a wounded bull, and Mr Wilson mentions that a takin killed a native in the locality where Mr Zappey was hunting.

The Szechuan variety is usually killed in the neighbourhood of salt licks, but I never saw any such place in Shensi. It is by no means an easy animal to hunt, as it frequents very rough ground, but the actual shooting is not a difficult matter, in Shensi at any rate, where, owing to the very rough nature of the country, one can approach quite close to the animals.

In the neighbourhood of salt licks, the takin make regular paths, and advantage is taken of this habit to spear them by means of an ingenious contrivance described at length in Mr Wilson's book. The biter is occasionally bitten, or rather speared, and a servant of Mr Zappey's suffered for many weeks through accidentally tripping over the string of one of these traps. The iron spearhead passed right through his thigh, fortunately missing the arteries and bones. A takin wounded in one of these traps rarely escapes death.

The natives round Wa-shan kill takin by means of a crossbow and arrows set alongside a run and also in foot snares.

The horns, I should have mentioned, somewhat resemble those of a wildebeeste, but are rougher. A good pair would measure somewhere about twenty inches. I was amused to see among a collection of big game trophies exhibited at Earl's Court in 1913, a pair of takin horns detached from their cores and affixed to a boss the wrong way round, a position which doubtless caused the uninitiated to marvel at the strange beasts which still roam the earth.

Wapiti (native name, *Hung-lu-tze*; Tibetan, *Ghwar*), found near Tachienlu. No foreigner has ever shot this animal, and its identity is uncertain. Major M'Neill saw a few hinds but no stag in the country to the west of Tachienlu. Mr Wilson saw some in the same locality in 1904. He describes them as ranging from the Yunnan border northward to S. Kansu. "The local chief of Chiala, residing at Tachienlu, keeps several in captivity at his summer palace (so-called), a few miles outside the town. These animals are about the size of a large donkey, and the stags carry fine horns. . . . The winter coat is light grey, and the summer coat rufous brown, with a light rump patch." It is impossible from this description to say whether the animal is the same as the Kansu deer, stags of which

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species Mr Fenwick-Owen and myself, at the date of writing, are the only Europeans to have shot.

Mr Wilson shows a photograph of a fine pair of typical wapiti antlers belonging to the race which he describes. He purchased them in Sungpan in 1903, the stag having been killed a few days previously just west of the town.

M'Neill's deer (*C. macneilli*; native name, *Peh-lutsze*) is named from a female shot by Major M'Neill west of Tachienlu in 1908 and described by Mr Lydekker in the Proceedings of the Zoological Society of London, published October, 1909. Major M'Neill writes: "The only chance I had of examining one at all well—through a telescope—showed a somewhat similar white rump patch to that of the American wapiti."*

The Kansu deer (*C. kansuensis*; native name, *Ma-loo*) was named from a female shot by Dr J. A. C. Smith, March 23, 1911, thirty miles S.E. of Tao-chow, Kansu, at an altitude of 11,000 feet. The Kansu deer, to quote Mr Lydekker, is probably only a dark-coloured race of the Szechuan and Yunnan *C. macneilli*. This is the only large variety of deer from China with which I am personally acquainted. Mr Owen and myself were fortunate in securing the stags we did, as several other European hunters have tried for them without success. I take the following description from an account I wrote at the time:

"An adult stag stands about fifty-seven inches at the shoulder, and weighs (approximately) 530 lb. A North American wapiti will scale about 700 lb. In appearance the Chinese beast is very much like a Scottish red deer, though, of course, larger in every sense. He has, however, more or less similar dark markings on the haunches and tail instead of the uniformly coloured rump patch of his big relation. He is in the winter brown-grey all over, and has not the distinctive dark neck and light body of the American animal. The legs are darker than the body. The hinds are relatively smaller, and I was much struck by the apparently abnormal size of their ears.

* Captain F. M. Bailey has kindly supplied me with the following note:

"There are three varieties of stag whose horns are brought for sale to Tachienlu, called in Tibetan (1) Sha-na, (2) Sha-me, (3) Sha-jia.

"(1) The Sha-na is said to be dark in colour and to have only six points to the horns. I saw horns of this stag which appeared to be those of a Sambhur. Their stages (?) are found two days' march to the south of Litang.

"(2) The Sha-me is reddish-brown and has twelve points to the horns. It is found at a place called Yara-Tsurong-Kar, two days' march to the north-west of Tachienlu.

"(3) The Sha-jia is grey with twelve to sixteen points to the horns. It is found three days west of Tachienlu at La-li-shi."

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" I saw only three stags and cannot, therefore, speak with authority as to their horn growth. They shed in April, the horns being complete in September. They are said to start roaring about the third week in October, though we did not hear one until the 1st of November.

" Their roar is quite different from the wonderful ringing bugle of the North American wapiti, which is one of the most musical sounds emitted by a wild animal. It resembles the sound made by a red deer, but is rather deeper in tone, and in the case of one or two stags I heard there was just a suspicion of ' bugling ' at the end of the roar. . . . Speaking generally, I should describe the stags we saw as resembling red deer in shape and build, but more uniform in colour, much larger, with the roar of a Scottish stag and the horns of a wapiti " (" The Big Game of Central and Western China ").

Mr Lydekker, though admitting that the horns of this species " approximate in a considerable degree to the wapiti type, having the three terminal tines nearly in a plane, parallel to the long axis of the skull, although the fourth tine is relatively smaller than in typical wapiti," does not rank them as wapiti. In the " Field " (Sept. 27, 1913), apropos of a note which I wrote regarding their call, he says: " The information given on this subject by Mr Frank Wallace in your issue of last week is in exact accord with what might have been suspected on zoological grounds. . . . The Kansu deer (*C. kansuensis*), like the Szechuan *C. macneilli*, is not a wapiti but a relative of the Kashmir hangul (*C. cashmirianus*) which has a call to some extent intermediate between that of a red deer and a wapiti, or, in other words, probably very similar to that of the Kansu deer as described by Mr Wallace."

The Kansu deer are found in the Minshan Mountains of West Kansu over an area of about fifty by twenty-five miles. They do not extend to the north-east or west, but are said to exist to the south beyond the mountains, and the deer already mentioned, the horns of which were purchased by Mr Wilson, may be identical. They are kept in captivity by the border chiefs, the horns being sawn off annually when in the velvet, as in this condition they fetch high prices among the Chinese owing to their supposed medicinal and aphrodisiac qualities. Although a very large number of wapiti horns are to be seen in the shops of traders in Chinese towns, it by no means follows that they belong to the species found in Kansu. By far the greater majority come from elsewhere. Chungking, Tachienlu, Sungpan, Chung-pa, Kiung-chow and Sui-fu are all centres for the trade in deer

KANSU DEER

From a Drawing by H. Frank Wallace.

PLATE LXVI.



Frank Wall 2004

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horns, and it is impossible to say definitely whence they are imported. That the trade is enormous and, equally, the destruction which goes on the whole time among these fine animals, may be gathered from the "Report on a Journey to the Eastern Frontier of Thibet," presented to both Houses of Parliament, 1905, by Sir Alexander Hosie. He writes: "Deer horns in velvet, to the value of Tls.30,000, are exported annually."

Mr W. C. Haines Watson puts the annual export of deer horns in velvet from Kuan-hsien at 1,500 catties (1 catty = $1\frac{1}{2}$ lb. English), valued at Tls.30,000, and from Sungpan he places the value of the annual export at the same figure.

Deer, particularly the larger species, are being steadily exterminated throughout the Chinese Empire. Were the natives armed with modern rifles they would quickly vanish altogether. With the weapons they already possess they can make pretty accurate shooting up to 200 yards. Mr Wilson writes: "At the lowest estimate, at least a thousand stags are killed every year for their horns in velvet," and this figure is probably far below the mark.

It is depressingly true that under existing circumstances nothing can be done to put an end to this ceaseless and senseless slaughter.

The usual method of hunting these animals adopted by the natives is to start before dawn and locate a stag by his roar. The hunters, usually four or five in number, return to the valley, indulge in a hearty meal, talk matters over and start out again in the afternoon. The ridges, extending from the main valley, are clothed on their northern slopes with forests of pine, larch, etc. To these the deer retreat during the daytime. The hunters post themselves round the particular patch of timber in which they think the stag they have seen is located and endeavour to stalk him as he emerges towards evening. Sometimes they attempt a drive. They also catch a few immature animals in native traps. Although their chief aim is to secure a stag with good horns, not for its beauty as a trophy—they care nothing for this—but for its value as translated into terms of pounds, shillings, and pence, they remorselessly slaughter any animal of whatever age or sex which comes within range of their long guns.

The first stag I saw was wandering alone over the slopes of a huge corrie, down which I was returning after a fruitless attempt on the roe. He only had seven points and was evidently a young beast. The next animal I encountered was a nine-pointer. We had started out, up the snow-covered

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ridge in the dark, and just as dawn was breaking, his roars, on the other side of the valley, warned us of his presence. As it gradually grew lighter I made out his dark form and those of three or four hinds. My hunter, unknown to me, intended no assault on him at that time of day, and it was not until we had wasted three-quarters of an hour that I realized this. We attempted a stalk, but the mist came down, and though I heard the stag roaring in the timber below me it was quite impossible to approach him.

A few days later towards dusk we found a nice ten-pointer, but he was in a very bad position for a stalk and escaped unharmed. The following morning we started early, and about three o'clock heard a stag roar. This, we eventually discovered, was the same ten-pointer we had already tried for. He was in a nasty place, a gorge whose sides were covered with pines and rhododendrons. We watched him for over an hour as the hinds worked slowly up to the top of the ridge where we lay. To make a long story short I got a shot as it began to get dark, missed him, but placed matters on a more satisfactory footing with a second bullet. His horns measured $41\frac{1}{2}$ inches in length, $34\frac{3}{4}$ inches wide inside, with a beam of $5\frac{3}{4}$ inches. Similar measurements for a very graceful eleven-pointer, showing the typical wapiti top as described by Mr Lydekker, shot by Mr Fenwick Owen, are: $43\frac{1}{2}$ inches, $38\frac{1}{2}$ inches, $5\frac{1}{2}$ inches. These animals are so remorselessly hunted by the natives that a sportsman is lucky to kill one at all with anything like a good head. Indeed, one of the most annoying contretemps which the foreigner may have to face when engaged in their pursuit is the banging of native guns, or the disappearance of his quarry owing to the intervention at a critical moment of some native "out for blood."

The Sambhur (*C. unicolor dejeani*; native name, *Hei lu-tsze*) is said to be found in Szechuan, though so far as I know this variety has been named only on the authority of the horns in the Paris Museum, and has never been killed by a European. Major M'Neill saw a hind and calf west of Tachienlu, and in any case it is rare. They exist in Yunnan, and most of those sambhur horns which are seen in the medicine shops (though Major M'Neill in the "Journal" of the Society for the Preservation of the Wild Fauna of the Empire (1909) writes: "I never saw a single head near Tachienlu which I would swear to as being pure sambhur") come from this province.

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The Pekin sika or Dybowski's deer (*Cervus [sica] hortulorum*) is a very handsome animal, averaging about 45 inches at the shoulder. The species was named by Swinhoe from an immature buck and doe taken at the sack of the Summer Palace at Pekin in 1860. Subsequently it was obtained in a wild state in the Ussuri district of N.E. Manchuria. The antlers are very large, rugose and less flattened than in the common sika. In summer the general body colour is a chocolate brown. In winter the coat becomes long and shaggy, especially on the neck, and at this season the hinds are more brightly coloured than the stags and retain distinct spots. The tip of the tail is apparently white.

According to Herr Dörries the species is abundant in the neighbourhood of Vladivostok. It occurs from Poussiet Bay inland and northward to the Hanka Lake, and ranges from here eastwards towards the coast of the Olga Bay. Its favourite haunts are mountains with deciduous woods and open places. It avoids pine forests and lives in herds of from five to thirty. It loses its horns in the beginning of May, and the new ones are already clean by the end of June. The rut takes place at the end of September, one or two calves being born at the end of May. These are reddish yellow in colour with white spots.

The Manchurian sika (*C. hortulorum typicus*) differs slightly from the above. There is no dark line down the back and the animal is slightly smaller.

Kopsch's deer (*C. hortulorum kopschi*; native name, *Yung-loo*) is a form of the sika, found in the province of Anwhei. Commander Hon. R. O. Bridgeman tells me he spent the greater part of two years trying to obtain a specimen in the Feng-huan-shan and Wei-yao-shan ranges. Major M'Neill also hunted them without success, though Europeans are said to have killed them. They inhabit rough, stony bush-clad hills about 4,000 feet high, and always keep in the densest cover. Commander Bridgeman, writes: "The stags I saw generally had eight points, but I saw certainly one with fourteen." This, of course, is most unusual in a sika. I have seen sika horns hanging up in shops in the border towns of Kansu, though never encountering the animal itself. I am confident that the discovery of a race of sika in Kansu is only a question of time.

An old hunter described to me a variety of deer, smaller than wapiti and larger than roe, spotted in summer, reddish on the sides and dark on the back, found in this province. They become much darker in the winter

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and are very difficult to get, as they are reluctant to break cover even when dogs are employed. Early morning and late evening would probably be the only time to get a chance at them and I never actually visited the locality they were said to inhabit.

Père David's deer (*Elaphurus davidianus*; native name, *Hie-lou*). No volume dealing with the larger mammals of China would be complete without some mention of this extraordinary animal. In the wild state it is unknown at the present day. The only living specimens are those preserved at Woburn Abbey. A herd of these deer were kept for a long time in the Imperial park at Peking, but they all perished, the last survivors being killed during the Boxer rising. It differs from other varieties of deer in the maned neck of the stags, the long, bushy tail, and in captivity, at any rate, in the case of the younger males, the antlers are frequently shed twice a year. These are unmistakable, with the long posterior antler, bifurcated front prong, and absence of brow tines. The stags stand about 45 inches at the shoulder, and, as might be expected from their large spreading hoofs, are fond of marshy places and swim readily. They call in June and July, the note being a kind of bray. The horns are dropped in November and December. The colour is uniformly tawny in the adult; the young are spotted. The closest affinities of this species seem to be with the American deer.

Roe deer (*Capreolus bedfordi* or *Capreolus melanotis*; native name, *Pao-loo*) are widely distributed throughout China, *C. bedfordi* being confined to Manchuria. The former variety are rather larger than the European form, and, though numerous, it is a matter of great difficulty to successfully stalk a really first-class head. I saw one and was after him for sixteen days, had two stalks, but never got a shot. I could have killed several smaller beasts, but I was particularly anxious to get a really good head, so left them for fear of disturbing the ground. But that is always the way with the trophy one most covets. I was told by Mr A. Purdom, an experienced botanist whom I met in China, that there was very good roe ground four days north of Sian-fu, the capital of Shensi province. They are plentiful one day's journey from Minchow in Kansu, but their distribution is so great that it is unnecessary to identify specific localities.

The altitude at which they are found varies. I never saw them above 14,000 feet. Their habits are much the same as those of the European



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COL. C. S. WOOD'S TIAN SHAN ROE.

PLATE LXVII.

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variety and they are found singly or in small parties. The best horns run to between twelve and thirteen inches in length, and resemble the very best Scottish heads; quite possibly they exceed these measurements.

Careful spying is most necessary to find these little animals, as the long grass completely hides them in the summer months. The huge corries of Kansu, where my chief experience with them lies, afford them a safe refuge. The steepness of the hills, coupled with the long grass, renders it impossible to spy the bottom of the valleys when one is above them. The only place to get a clear view is from the opposite ridge. There is practically only one hour in the day during which it is actually possible to stalk roe, namely, from 4.30 to 5.30 in the afternoon. A two hours' steady climb is usually essential to reach the top of the ridge, the only coign of vantage from which to conduct a successful stalk unless favoured by extraordinary luck. Consequently early morning stalking is a difficult matter, as the roe retire to cover with the approach of dawn.

As a rule the roe stand at the edge of the wood, hidden by undergrowth, and make quite sure that the coast is clear before venturing forth. They are always very much on the alert, the bucks more so than the does, in my experience, and never far from cover. By far the commonest game animal I encountered, it is more difficult to make certain of getting a good roe head than even a white-maned serow. I saw the dear little animals every day, but only one really good buck, in addition to that which cost me so many anxious moments, alas! in vain.

He had already taken the alarm, as it was impossible to deaden the noise of our footsteps on the frozen snow. As he slowly made off down the hill, hope revived, for suddenly stopping he stared into the wood ahead of him with cocked ears. Almost immediately another buck emerged and walked slowly towards him. He passed the first, when this latter animal suddenly whipped round and charged up the hill after him. Another ten yards and I should have had a splendid chance; but it was not to be. They dashed into the wood and I never saw either again.

Michie's tufted deer (*Elaphodus michianus*; native name, *Hei-chee-tze*) is found in the neighbourhood of Ningpo. It keeps near water and lives in reed brakes.

The Ichang tufted deer (*Elaphodus ichangensis*) is a hill lover and differs

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from the former animal in colouring. It was first named in 1904 from a specimen shot by Mr A. E. Leatham.

Sclater's muntjac (*Cervulus sclateri*; native name, *Hung chee-tze*) is the eastern representative of *C. lacrymans*. Height, eighteen to twenty inches. Hair, smooth and glossy. General colour, reddish brown. Horns, five to six inches long, with a small brow tine. Upper canines developed with tushes about two inches long. Fawns spotted.

C. lacrymans is scattered throughout Szechuan and Western Hupeh up to 7,000 feet.

It is not rare and has a wide range. A hill-loving animal, it abounds in the Ningpo hills and at the head of the Ichang gorge. Other muntjacs which occur are the Hairy-fronted muntjac (*Cervulus crinifrons*), Reeves' muntjac (*Cervulus reevesi*), and Bridgeman's muntjac (*Cervulus bridgemani*). They are all closely allied, but vary in minor characteristics.

The Hornless river deer (often erroneously called Hog deer) (*Hydrelaphus inermis*; native name, *Chee-tsze*, or Chinese water deer) are plentiful on the banks of the Yangtze, living among the reeds and rough grass in the summer, and in the winter among the low hills in the neighbourhood of the river. They are fond of water and are bold swimmers, often escaping thus when wounded. The does drop their fawns in May, and are very prolific, sometimes having as many as four or six at a birth. "This prolific reproduction is quite unique among the *Cervidæ*, and is one of the reasons for regarding the genus as a very ancient type." They are much hunted by the Chinese, and thousands are sold annually. The species does not extend westward beyond the low hills thirty miles or so below Ichang. It is a courageous little animal and excellent eating. The male develops tushes 2 to 2½ inches long, and the development of these upper canine teeth is said to occur in females. Height about twenty inches. Hair, coarse and thick. General colour, light rufous. Fawns spotted.

Musk deer (*Moschus sifanicus*; native name, *Chang-tsze*) are fairly common all along the Chinese-Tibetan border at an altitude varying between 8,000 feet and 14,000 feet. An agile little animal, it is fond of lying along the upper part of some half-fallen, sloping tree trunk, such as are common in the forests of spruce, silver fir and larch which still exist, though sadly depleted. It is trapped and hunted remorselessly by the

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natives for the sake of the musk gland situated on the male organ. Musk is still valuable, though it has depreciated of late years. A favourite method is to hunt them with a scratch pack of dogs, the guns being posted at likely passes. I saw them on several occasions when we were trying for serow. Height at shoulder, about twenty inches. Hair, coarse and brittle. General colour, dark brown, speckled with greyish yellow. They are beautifully marked little beasts and good eating. Neither sex carries horns. Tusks from India have been recorded up to four inches, but I never saw a Chinese one of this length, that is, exposed from the gum. They are kept in captivity by the Tibetan chiefs.

Those from the west of Tachienlu may represent a local race.

The Burhel or Blue sheep (*Pseudois*, or *Ovis nahura*; native name, 'Ngaiyang or Panyang) is an interesting animal in many respects. It indicates the transition point from the sheep to the goats, while providing first-class sport, and a very pretty trophy to the successful stalker. Burhel are common throughout the Chino-Tibetan borderland on the higher ranges at an altitude between 10,000 and 17,000 feet. Specimens have been mentioned as coming from Shensi, though I fancied that Kansu was the eastern limit of their range. A full-grown ram stands about thirty-six inches at the shoulder and weighs about 160 lb. The blue-brown body and legs are handsomely marked with black and white. These sheep have a rather lanky appearance, as they move about the grass slopes and rocky tops which they make their homes. The lambs are dropped in May. The females carry small horns. The horns of the males are familiar to every Indian sportsman; those from China are shorter and do not curve backwards so prominently. Two specimens killed by Major M'Neill on the Hsueh-lang-shan range, west of the Min River, taped about twenty-six inches each, but I have never seen a head from Kansu which measured more than about twenty-two. The Kansu variety may subsequently be identified as a distinct race.

A species of the great Asiatic sheep is said to occur to the north and west of Tachienlu and has been seen in the neighbourhood of Litang, but so far as I know none have ever been shot by Europeans.

The Serow (*Capricornis*, or *Nemorhaedus sumatrensis*; native name, *Yeh-lau-tsze*, or *Ngai-lau-tsze*) is common throughout Western China. Between 5,000 and 10,000 feet in Western Szechuan it is probably the commonest animal.

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Père David secured the earliest specimens in 1869. M. Berezovski obtained them in 1893-4 in the mountains north-west of Lungan-fu. Messrs Brown, Wilders, Brooke, Mears, Zappey, Horne and Major M'Neill have also killed them.

Around Tachienlu *C. milne-edwardsi* is the commonest variety. Mr Wilson states that round Wa-shan the white-maned serow (*C. argyrochaetes*; native name, *Sang-u*) is more frequent. On the high mountains of North-Western Hupeh, a serow occurs, probably the latter variety. This animal is also found in Western Kansu.

They are handsomely marked animals. The general colour is a dark blackish grey, shading to burnt sienna on the lower part of the forelegs. The hindquarters are distinctly reddish in tone. The tail is short and dark; the eye rather small, with a small but prominent gland beneath. The hoofs are about the same size as those of a red deer, but more splayed. The horns, running to between seven and ten inches in an adult, are black, curved, ringed at the base and very sharp. Though not naturally a savage animal, the serow can be very vicious when brought to bay, and cases are on record of dogs and even men being killed by them. The usual method of pursuit is to hunt them with a scratch pack. This is all right when the dogs know their job, but it not unusually happens that after a good deal of barking and aimless running about they lose their quarry. The serow, when pursued, stands at bay beneath some overhanging rock which protects his flank, and can then be shot by the hunter. They are not easy animals to find, though they may be common in the district, and are difficult to approach unless one is favoured by chance. They are clumsy movers in the open, but first-rate climbers and possessed of considerable cunning. They stand about forty-two inches at the shoulder and weigh approximately 200 lb.

Goral (*Urotragus* or *Nemorhaedus goral*; native names, *Yeh-yangtse*, *Ngai-yangtse*) are quite common in parts of China. Four species are given in Rowland Ward's records:

Urotragus edwardsi; locality, Szechuan.

Urotragus caudatus; locality, north of Peking.

Urotragus cinereus; locality, Szechuan.

Urotragus griseus; locality, Szechuan.

The Hupeh and Szechuan goral are easily distinguished by their grey

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colour, and range up to 8,000 feet. They inhabit rocky precipitous country and lie up in the daytime on ledges, partially covered with scrub, or in the mouths of caves. They usually feed in small parties during the early morning and late evening. The majority of those killed by Europeans have been shot in the neighbourhood of Ichang, where they are plentiful. This variety is known as the yellow-throated goral (*Urotragus* or *Nemorhaedus henryanus*). The sides of the body are darkish grey; tail, upper front of foreleg and back line, black; fore and hind legs from knee and hock to hoof, light chestnut; throat patch, pale buff. Height at shoulder about twenty-four inches. Kids are born in March. The Szechuan species is slightly larger. They are found in Kansu, Shensi, and Western Yunnan. The horns are between six and eight inches long, conical in form and marked by irregular ridges.

Wild pig (native name, *Yeh ch'u*) are common in many parts of China. There is nothing the Chinese love so much as pork, and the death of a pig is the signal for great rejoicings if the local inhabitants think they are going to share in the spoil. Wa-shan is a favourite place for these animals, and Mr Zappey found one in 1908, which had just been killed and disembowelled by wild dogs. They are common in Western Szechuan. *Sus leucomystix* is found all over Eastern China, and has a pale streak on each side of the face. It is also found in the Lower Yangtze delta. They average between 240 and 300 lb. In Western Hupeh they range up to 9,000 feet.

S. moupensis is found in Western Szechuan and is said to be closely allied to the wild pig of Europe and Southern Asia (*S. scrofa*).

Several varieties of gazelle are found in Kansu, including Przewalski's gazelle (*Gazella przewalskii*) and the Mongolian gazelle (*Gazella subgutturosa*), both of which are known as *Hwang-yang* to the natives; the Thibetan gazelle (*Gazella picticaudata*) has recently been obtained just inside the Chinese border. It is called by the natives *goa*. The question of the differentiation of the Asiatic gazelles, however, is not clear. *G. przewalskii* and the species we obtained are to be found in the long arm of Kansu which extends to the north-west. They are alert little animals, rarely give an easy shot, and are most excellent eating.

G. przewalskii stands about twenty-six inches at the shoulder and is closely allied to, though rather larger than, *G. picticaudata*. The main

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characteristics of both varieties are the extremely short tail and the absence of horns in the females. The horns of the males are strongly hooked at the tips, which renders them easily recognizable. The ears are short and pointed at the tips. They are yellower in winter than summer, and the adult bucks grow darker with age. The hair is long and soft. There is no tuft on the knee; the legs are thin and delicate looking. The young are born in May.

G. subgutturosa stands about four inches taller at the shoulder than *G. przewalskii*, and the tails of those shot by Mr Fenwick-Owen and myself are black and much longer than those of the latter. The face is very light, with the exception of a dark line from the eye to the jaw. There are tufts of long hair below the kneecap. The rump is white; the hair on the edge of the flank distinctly dark. The inguinal glands, about one and a half inches deep, are a noteworthy feature of both sexes. The females are hornless; the bucks' horns are straighter than those of *G. przewalskii*, with a slight backward curvature, and are black in colour. The young, generally two in number, are born in June. The bucks' necks swell considerably during the pairing season. When in pursuit of a doe, the buck holds his tail straight up in the air.

They are usually found on absolutely level, stony ground dotted with small, stunted bushes, or in the small hollows and clumps of yellow grass which break the monotony of the country. Always on the alert, they potter on and on, rarely allowing their exhausted pursuer to get within 200 yards of them. If he manages to get under the slight cover which the sparse vegetation affords and is seen by his quarry, particularly if the latter is solitary, he may induce a rather closer approach by waving a handkerchief or tuft of grass gently from side to side. Curiosity is implanted in their natures, as it is in that of the prong-horn antelope of North America.

H. F. WALLACE.

MONGOLIAN WILD SHEEP (*Ovis ammon typica*)
PLATE LXVIII.



Waldwell 1914

UPPER ASIA

I. MONGOLIA AND THE RUSSIAN ALTAI

IN North-Eastern Asia, between the fertile plains of China and the great Siberian lowlands, is a great plateau; it is not of the immensely high altitude of Tibet, nor possessing the peculiar characteristics of the Pamirs, but of more varied character than either. For in the south it is very arid desert, in the north it is a wonderful pasture land, while from its somewhat featureless surface rise glorious mountain groups of great beauty and wonderful scenery. The various grades of scenery pass from the horrid depths of the Gobi Desert—which forms the southern slope of the plateau—to higher, rolling downlands, where innumerable Mongol shepherds pasture their flocks. Bordering this is an encircling ring of mountains which rise above the plateau, and eventually drop in successive terraces to the low Siberian plains. Excellent grazing country at a high altitude and dense forests on the lower slopes form the sporting localities that attract hunters to these far regions; for although the great extent of arid country contains big game, the highlands are the home of that magnificent beast, the *Ovis ammon*, a trophy which every hunter considers to be one of the finest in the world.

Of the immense area included under the title of Upper Asia, only a small proportion is really game country, worthy of a special expedition for shooting purposes. There are vast tracts of land where no living thing exists, the shooting grounds are far removed from each other, and each really necessitates a separate journey. Besides the Mongolian Plateau, which itself holds two distinct hunting grounds—namely the Altai and Khingan Mountains—there are those remote haunts of wild sheep, the Kamchatka Peninsula and the mountain ranges in North-Eastern Siberia.

The Altai district of Outer Mongolia and of the Tomsk Province of Siberia, however, forms the most important, as well as the most productive hunting centre in Upper Asia. It is a region of great wealth and beauty of scenery; a rugged, forested mountain country on the north, merging into bleak but well pastured plateau on the south. Through it runs the ancient line of demarcation between the Russian and Chinese Empires, now somewhat modified by recent changes in Mongolia, and the advance of Russian interests in that region.

The Altai is known to sportsmen chiefly as the home of that gigantic

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and truly magnificent quarry, the *Ovis ammon*. It is in search of this trophy that all hunters make for the Altai. In order to become the proud possessors of those heavy, well-curved horns men have travelled for thousands of miles before outfitting with caravan to make the final assault on the cold, bleak, upland home of this sheep. But this distance is discounted in view of the reward that awaits them. The glorious journey by boat up the great Siberian waterways, the novel stages by tarantass through the idyllic scenery of this Siberian Switzerland, and finally the life with caravan and native hunters on the high mountain pastures beyond: these are the things that count, and make a trip to the sheep grounds of the Altai well worth the while of anyone with four months at his disposal.

The ammon of the Altai rival the poli of the Pamirs in bulk, weight and size of horn. In fact no other beast, for its size, carries such weight of horn. The earliest travellers who attempted to describe this animal remarked that it had the appearance of a sheep, although it was as large as a donkey, and that the horns were so weighty that a man could scarcely lift them. In point of fact, an adult ram of this species stands over 50 inches in height at the shoulder, while even the wild ass or kulon of Central Asia does not measure more than 53 inches. The horns, which run to 60 inches or more, have the immense girth of $20\frac{1}{2}$ inches, and weigh, with the dry skull, as much as 45 lb. As compared with *Ovis poli* the ammon is actually larger in size, while its horns, although never attaining the same length, are enormously massive. The chief characteristics of the ammon are its very thick, heavy horns which nip in close to the head on their middle spiral, and the lack of the throat ruff which is such a feature of the *Ovis poli*. The existence of this wonderful beast has been known since the days of the earliest European travellers to Mongolia in the middle of the thirteenth century, but detailed information was lacking until about forty years ago, when the first modern traveller penetrated to those bleak plateaux 'twixt China and Siberia. It was not until 1895 that the first sportsman reached these solitudes, and only in 1896 did the first gnarled horns of the great Mongolian wild sheep arrive in England. These were the trophies obtained on the second expedition of Major Cumberland to the Russian Altai. Since then, keen hunters have followed in his footsteps at the rate of about one party a year. It is a long way to go for the sake of procuring a single trophy; for with the exception of a chance at gazelle and a few small ibex it being unlikely that anything else would fall to the rifle of the hunter. But this one trophy is worthy of a special expedition; and it will take all



GAME COUNTRY ON THE SIBERIAN-MONGOL FRONTIER.



HUNTERS OBTAINING TRANSPORT AT A MONGOL ENCAMPMENT.

PLATE LXIX.

UPPER ASIA

the concentrated efforts and energy of the hunter to bring a good head to bag. The ammon is not to be held lightly, he is a worthy foe, of wonderful sagacity, living in a hostile country. His horns are a rarity, which one may be proud to possess.

The home of the ammon stretches from the Siberian frontier to the borders of the high Gobi Desert; it consists, in fact, of the north portion of the great plateau. The wild sheep range on to the watershed of the mountains which form the actual frontier between the two Empires and are the water-parting between Arctic drainage and the inland, self-contained basins of the heart of the continent. The Little Altai, the Sailugem Range and the Tannu-ola Mountains form the northern limit; the crest of the Mongolian or Great Altai bounds their territory on the west; towards the south and east they range as far as well-pastured hill country extends into the Gobi. The nucleus of their range, and their real retreat, is the north-western corner of Outer Mongolia, between the Little and the Mongolian Altai. This is where they are most numerous and run largest; towards the south and east they diminish in numbers and size, it being still doubtful whether the wild sheep which the Russian explorers have found on the Ati-bogdo and Gurbun Saikhan ranges in the Northern Gobi are true *Ovis ammon* or some new variety of the species. On the analogy of the variations of *Ovis poli* in the Pamirs and the western Tian Shan, it is probable that the eastern allies of the ammon are a distinct and well pronounced variety. There is a wild sheep in the mountains to the south-east of Lake Baikal which is probably of the same type.

It is the extensive grazing grounds which lie at the sources of the Upper Kobdo River and its tributaries that call for our attention. It is here that all previous hunters have spent their time, and, from our own experience, it seems as if even the great untried ranges in the heart of Mongolia do not hold out any better opportunities. This region is one of severity of climate and scenery. The home of the ammon is more open to the elements, more bleak, more liable to sudden and drastic changes of climate than even the "roof of the world" itself. The Altai sheep grounds are not wide valleys sheltered between higher mountain ranges, but one great table-land unprotected on all sides, swept by wind and snow, exposed to the bitter cold of winter and scarcely tempered by the short, uncertain summer months. Northwards is the heavily forested and richly vegetated Alpine scenery of Siberia, a warmer, damper clime, well-suited to the needs of the Russian colonists. Southwards the plateau inclines and eventually

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merges into the barren Gobi Desert which stretches interminably towards the fertile plains of China. Thus the haunts of *Ovis ammon* are peculiar, isolated, and comparatively free from any likelihood of being disturbed by the progress of civilization. They are not even in danger from the ordinary increase of the indigenous native tribes, for the Mongols are rather decreasing than increasing. In this respect the ammon has the advantage over the poli, for the latter is becoming more restricted in its range as time goes on, but the fastnesses of the ammon remain inviolate.

Although the ammon has a large range, its refuges have only been attacked from one point. Every traveller who has set out to hunt this sheep has entered from the north or the Russian side, assaulting its stronghold at the nearest point of contact. It is a long journey from England, but, considering the distance, the time occupied is really very short. It is roughly 3,500 miles to the foot of the plateau, to the point where one outfits with pack horse and caravan, and this occupies about a month. This brings one practically on to one's ground, so, allowing a month for hunting, three months might see the hunter back in England with his trophies. Train, boat, tarantass and pack horses will supply transport throughout the journey. There need be no long days on foot, even on the hunting ground, for one can ride everywhere.

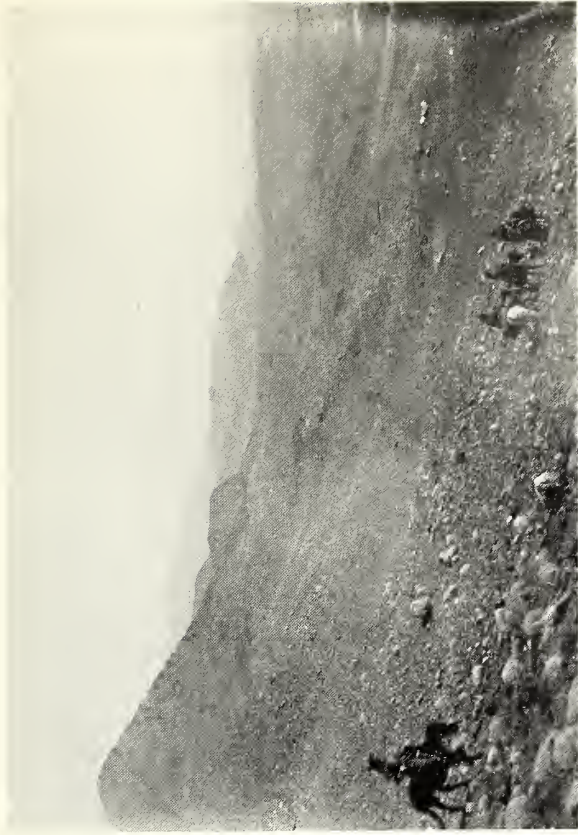
In order to reach the haunts of the ammon, it is necessary to take the Siberian Express from Moscow and to disembark five days later at the wayside station of Novo-Nicholaevsky in the heart of Siberia. From here, during the summer months, steamers ply up the Ob River as far as the towns of Barnaul and Biisk, whence a good post road leads on up the valley of the Chuya to the little frontier post of Kosh Agatch on the northern side of the Little Altai. Here the typical Siberian scenery of forest, river and rugged mountain is left behind, and the traveller meets the open, treeless steppe country typical of the barren heart of the continent. Kosh Agatch itself is a steppe valley, situated at 6,000 feet above the sea—beyond tree growth; and here for the first time fauna of a Central Asiatic type is met with. On the east and south the Kosh Agatch or Chuya steppe is bordered by the Little Altai and the Sailugem ranges, which form the watershed between Siberia and Mongolia. The ranges are not very high, they rise gradually in big rounded domes of snow-patched shale to about 10,000 or 11,000 feet, the cols and passes being 8,000 to 8,500 feet in altitude. This is the limit of the range of *Ovis ammon* northwards towards Siberia. The sheep extend on to the northern side of the watershed, but it is scarcely



Photo by]

[Mr. J. H. Miller,

THE MONGOLIAN PLATEAU IN SEPTEMBER.



IN THE VIGUR VALLEY—The chief resort of *Ovis ammon*.



Photo by]

[Carruthers & Miller,

TYPICAL MONGOLIAN SHEEP-COUNTRY.

UPPER ASIA

worth while hunting there nowadays, although in days gone by it used to be. Kosh Agatch will supply horses and men for the actual hunting expedition, and are better engaged permanently for the duration of the trip. The Mongols are independent people, and do not care to supply service or transport unless compelled to do so by their chiefs; and even then their one idea is to shift the job on to their friends at the next encampment and to be rid of one. At Kosh Agatch, also, the last details of one's commissariat should be attended to. It is unnecessary to bring stores from the big Siberian towns, Biisk and Kosh Agatch supplying all that is needed in the food line. It should be remembered that for the whole period after leaving the latter post, until the return, no villages or trading stations will be met with. The only supplies that Mongolia will produce are milk and meat.

The crest of the Little Altai is broken by several easy passes, the Chagan Burgazi and the Tarkhaty being the most often used, for these lead direct to the best hunting grounds. There are others which would lead from the Kosh Agatch steppe, across the Sailugem range, to the east; but it does not appear that any hunter has tried his luck in that direction. By going east from the post of Kosh Agatch and exploring the ranges that lie around the Alpine lakes of Ak and Kendikti-kul, a traveller might have a most interesting and instructive trip. There are sheep there for certain, and the country looks most promising from the east—the Achit Nor side.

Practically all previous visitors have made for the Chagan Burgazi Pass, hunted around it, or on the Mongolian side, continuing the expedition along the southern side of the range and returning by way of Tarkhaty or Nam Daba Passes. It will be seen that there is no need to go very far. A study of the map might lead one to suppose that vast and untouched fields for sport lie to the south further into Mongolia. Large bare spaces, without names, seem to indicate unexplored regions, which might be a real refuge for all wild game, but experience teaches us that this is not so. The southern slopes of Little Altai to the west of the Chagan Burgazi Pass, and the circle of ranges that spread around the head waters of the Uigur or Darkhaty Rivers and its tributaries, these seem to be the real home of the ammon, both in very large numbers and of a very large size. All the largest known heads have been obtained here.

In 1897 Prince E. Demidoff and Mr St George Littledale made an excursion further into Mongolia, and hunted in a large circle which included the Beliou, Bain-Khairkhan and Sumdairik districts, but their success did not warrant so much time and trouble. They found sheep on the Bain-

THE GUN AT HOME AND ABROAD

Khairkhan; indeed, it was here Mr Littledale shot a fine 60-inch head, and Prince Demidoff got a 51-inch head in the Beliou range, but their party marched far through gameless country. The big mass of Muss Taou, which they intended to visit but did not reach, still remains unhunted; while the region around the lakes of Dolto Nor and Dain Gol does not seem to be good ground. This latter district is overrun by Kirghiz and their flocks, but the territory north of the Chagan-gol valley is Mongol, and their small numbers in no way disturb the game. This party eventually returned to the Uigur Valley and had good sport before recrossing the Little Altai.

Since that year no one has attempted to find better hunting grounds in Mongolia, being contented with the prospects held out by the southwestern flanks of the Little Altai and the country around the Uigur Valley. In 1910, in company with Mr J. H. Miller and Mr M. P. Price, we had opportunities of finding out the possibilities of ammon shooting through the whole of North-Western Mongolia, from the Tannu-ola range to the Mongolian Altai. We eventually came to the conclusion that although the ammon are to be found in many localities, the only one worth hunting was the region bordering the Darkhaty and Uigur Valley on the north. This is an extensive district and is not likely to be shot out. We found traces of wild sheep all the way from the southern slopes of the Tannu-ola to the Mongolian Altai. They certainly exist as far north of the ranges at the head of the Kemchik River, and we saw them on the Turgun or Kundelum Mountains; on the main Mongolian Altai I think they are "local" and probably confined chiefly, if not entirely, to the north-eastern side. At the main sources of the Kobdo River, above the Dolto Nor Lakes, there should be some good ground. Colonel Abbot Anderson and Major Pereira, in 1911, obtained heads at a point near the western shore of the Upper Dolto Nor. Further along the range, the big buttress to the south of Dain Gol looks as if it might hold big sheep; further still there are sheep-grounds on nearly all the spurs which run out into the Gobi.

Returning to the northern approaches to the main hunting ground, the traveller will leave the Kosh Agatch steppe by an easy incline, and after passing through the Little Altai, will see before him a world of rolling downs, topped in places by higher shale ridges patched with snow. In the hollows flow delightfully clear streamlets, over pebble bottoms; here and there the valleys are boggy and the streams form small lakes. Luxuriant grass and many flowers carpet the hills. The altitude averages



OVIS AMMON.



OVIS AMMON AND MONGOL HUNTER.

PLATE LXXI.

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about 7,000 feet. During the whole shooting expedition camp is not likely to be pitched below 5,000 feet, the hunter generally finding his quarry at between 7,000 and 9,000 feet.

With a compact caravan and a hardy Mongol hunter, in the early summer, the prospects are pleasant enough. All energy can be concentrated on finding and successfully stalking the magnificent beast which claims these highland pastures as its own.

The *Ovis ammon* has the advantage of living in a particularly difficult stalking country. The low, even skylines—unbroken by rocks or vegetation—the smooth, grassy downs covered with short grass, on which it is easy to see even marmots at an immense range, the clear atmosphere and the shifty winds—all these are thrown into the balance against the chances of the hunter who is pitting his wits against a beast which itself is excessively wary and peculiarly able to look after itself. The hunter may prepare himself for the highest form of hill stalking when he attempts to hunt the ammon. He may go for days without being given an opportunity of a stalk; he may stalk for days and be unsuccessful, and he may for days wait on a herd which contains his chosen head, without being given a chance of approach. The ammon can take up positions which are impregnable, and the hunter has to wait.

My own experiences on two occasions show the uncertainty of sheep hunting. After two days of failure to sight anything worth shooting, although there were many herds about, on the third day I spied a herd of fifteen rams at seven o'clock in the morning at a range of about two miles. Very early hours are essential in sheep hunting, especially with such quarry as the ammon, which are liable to take up impregnable positions after their early morning feed. The first two or three hours of daylight are worth the rest of the day. A telescope is also an essential item of the hunter's outfit. In the Altai one is treated to views over immense stretches of country; to sight your quarry at two miles' range is phenomenal in any region, but here it is one's chief advantage, granted that the telescope is there to aid one to make certain the value of the beasts in the herd. Although I sighted my herd at seven a.m., by the time I got up to within 400 yards of them I found them lying down in the middle of a grassy tableland. The nature of the ground did not allow a closer approach. This was at nine o'clock, which shows the necessity of being on one's ground, and, if possible, of getting in a stalk, very early in the day. It also proves the ease with which the ammon feed; they had fed for the day by nine o'clock,

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and would not move again until the evening. I waited on my herd of rams all day. I moved round them in a half circle at a safe distance, and reconnoitred the lie of the land on all sides. It was then a toss up which way they would move when they did start to feed. Finally they got up, one by one, and began to feed in the opposite direction to which I was. A sharp retreat, a race round at full gallop on horseback under cover of the edge of the tableland, and I found myself lying flat on the ground with the herd feeding towards me. It was dusk by the time I got in my shots, and so dark that I could not even follow two I wounded, but the day's waiting resulted in four ammon.

In contrast to this can be recorded a stalk I experienced on the following day. I went out late, and of course found my quarry already lying down. In this case, instead of a herd, there was a single ram; in place of the wide, smooth tableland, without cover, the position taken up by the solitary beast was an isolated pinnacle of grass and rock. A successful stalk would enable the hunter to come within a very close distance, in fact, it looked as if in order to get a shot at all one would come up over the edge of the pinnacle within twenty yards of the ammon. Intense excitement held me as I quietly crept up the side of the "kopje"; it seemed impossible that the wind would be steady in such a place. This time, however, it held. I came up over the edge on to the little grassy top literally within twenty yards of the ammon. The same second he knew and jumped to his feet. As he stood up I squatted down. A big boulder stood between us and hid all but a rounded nose and the top of his heavy horns. Then he took a step forward, exposed his shoulder, and instantaneously a bullet passed through it. The great velocity of the bullet at such close quarters did not allow it to expand and do much damage, he went headlong over the edge of the pinnacle, picked himself up, and went for some way before I stopped him. This will show that approaches are not always the same, that herds of rams and single beasts are likely to be met, and that long shots are not always the rule. Of a different type of stalk was one experienced by Mr J. H. Miller, when he brought to bag a 61½-inch head. He found a herd of eleven rams, all of a large size, with horns varying between 50 inches and 60 inches. A difficult stalk brought him to a distance of 250 yards from them, but no closer approach was possible. A long shot was followed by a four-mile blood trail, and eventual success. The ammon are amazingly "tough," and will go for miles even when very hard hit, but the open nature of the country is a great help when

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following wounded beasts. It is possible to cover a very large extent of country in a day, for one always hunts on horseback. It is an advantage to be independent of a return to camp the same day, if it is possible. A herd is often found too late in the day to allow a stalk, or a chosen head may have been marked down and approach is impossible; on such occasions it is exasperating to have to go back five miles to camp, when an outfit for a night out would enable the hunter to have the very best possible advantage at dawn the next day.

With any luck at all, heads of 53 inches to 60 inches should be obtained by any hard working hunter in this district. The record heads are $62\frac{1}{2}$ inches and $61\frac{1}{2}$ inches; 56 inches being a good average head. The impression of weight given by a pair of ammon horns results from their immense thickness, for they are known to run over 20 inches in girth.

The Altai cannot be said to hold out much prospect of sport besides the ammon. There are ibex in the more rugged declivities on the northern side; in fact, we have on record a head of $48\frac{1}{2}$ inches obtained by Colonel C. B. Wood. As a rule, they run small and are nowhere in large herds as in the Tian Shan; but their distribution is wide, for they extend from the Little Altai, through the Mongolian ranges, right away to the Dungu and Gurbun Saikhan range, which lie in the heart of the Gobi Desert to the south of Urga.

The gazelle are more interesting, for they are a feature of the uplands, and peculiar to these parts. On the Kosh Agatch steppe the traveller may come across the first indication of these highland-loving gazelle, while on the Mongolian plateau he is sure to chance on them at some time or other. The Mongolian gazelle, *Gazella gutturosa*, ranges over the higher parts of Outer Mongolia, and is generally found at about 8,000 feet altitude in summer. In winter they descend to the more sheltered valleys and lake basins, such as are to be found scattered over the whole of Mongolia. They run in large herds, males and females mixed, and are peculiarly easy to drive and out-manœuvre.

On the lower portions of the plateau, and in the depressions, one may come across the smaller *Gazella subgutturosa*, and in Southern Mongolia the rarer Przewalski's gazelle is found.

Apart from the Altai districts, the only portion of Mongolia which is likely to attract the attention of the sportsman is the outlying border range on the eastern frontier, namely the Khinghan range. This, however, would not form a part of a journey to the Altai, but constitutes an altogether

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separate expedition, of which Peking is the starting point. The Khinghan is a long, narrow range extending all the way from the north bend of the Hoang Ho right away into Manchuria. It is nowhere of any great height, but much of it is very wild country. It roughly forms the eastern wall of the great plateau of Upper Asia. Any hunter who finds himself in Peking with a month or two to spare, could make an interesting excursion into these mountains well worth the trouble, although his bag can only consist of wild sheep. They are of an interesting variety peculiar to this range. The Khinghan wild sheep have been named *mongolica*, a race allied to the *hodgsoni* ammon of Tibet, its chief characteristics being great thickness of horn like the true ammon, but with a heavy ruff like the poli; it is distinguished from the Tibetan sheep by less of "nip in" and more of a rounded front surface.

In 1908 Major J. H. Abbot Anderson procured these sheep in the southern portion of their range, on the mountains between Kalgan and the north bend of the Hoang Ho. He found them inhabiting a stony plateau at between 4,000 to 5,000 feet, in small numbers; apparently they were very much on the decrease owing to progressive Chinese colonization. He and his companion shot heads of 35 inches and 41 inches and picked up the record head of 50½ inches.

There is a wild sheep, which the Russians have named *Ovis koslovi*, existing on other ranges on the southern borders of the Gobi; this will probably prove to be identical with *Ovis ammon mongolica*.

II. EASTERN SIBERIA

The rest of Upper Asia, outside Mongolia, is composed of the forested plains, the swamps, tundras and occasional groups of rugged mountains which rise above the jungles—a vast region of great uniformity stretching from the frontiers of China to the Arctic Ocean. In its southern portion there is much of beauty and interest; there is a fauna of some variety, which includes the moose, wapiti, roe deer, reindeer, musk deer, bears, and even ibex. Further north the game becomes scarcer, until the vast uninhabited tundras are reached. But even as far north as the Arctic Circle, and well inside it, there are mountain ranges holding wild sheep.

The southern borderlands of Siberia, which march on the Chinese Empire, are for the most part wooded hill country, well worth a hunting



From "Unknown Mongolia."]

[By permission of Hutchinson & Co.

IN THE SIBERIAN HIGHLANDS.



From "Unknown Mongolia."]

[By permission of Hutchinson & Co.

SWAMPS AND FORESTS IN EASTERN SIBERIA.

PLATE LXXII.

UPPER ASIA

trip; the interesting but not very showy trophies it produces are thought worth going for. In the provinces of Tomsk and Yeniseisk, around the upper waters of the Ob and Yenisei Rivers, there are vast forests where moose, wapiti, roe deer, bears and many of the fur-bearing animals abound, while on the ranges which rise behind, ibex, reindeer and musk deer are more rarely found. By going up the rivers in mid-winter, when the frozen surface grants an easy way for transporting supplies and kit, a hunter might have a novel, if somewhat "tough" trip. Siberian hunters do this every winter in search of fur, most valuable sable being a feature of the region at the sources of the Yenisei. It is a vast and only partially explored tract of country, that stretches along the Siberian side of the Mongol frontier; so there is scope for new and original work. The Siberian railway and the towns alongside of it form a good base to work from in this particular region, but should one attempt to penetrate the great wilderness to the north-east it will be a much more serious undertaking. Out in that unknown north-eastern corner of Asia the only land features that catch the attention are the volcanic mountains of Kamchatka, and ranges such as the Stannovoi, Yablonnoi, Yerkhoyansk and Byrranga which break the endless sameness of the northern wilderness. These are all very remote and inaccessible regions, but their novel character might tempt hunters who are eager to experience something quite new.

Kamchatka has been visited by European sportsmen, and the tales they have told of the wild sheep and bears that inhabit that drear peninsula seem tempting enough. No traveller, so far as I know, has had the initiative to make an expedition from the region of Lake Baikal, along the Yablonnoi and Stannovoi ranges to Kamchatka. There are many problems to solve. Wild sheep of a peculiar variety, named *Ovis canadensis borealis*, allied to the North American sheep, exist on the Stannovoi mountains; moose range as far north as the shores of the Sea of Okotsk; reindeer are found all the way to the Arctic zone, and in the peninsula of Kamchatka another variety of wild-sheep—*Ovis canadensis nivicola*—roams. Kamchatka holds out the prospect of obtaining a few interesting trophies, coupled with a considerable expenditure of time, and of being submitted to the ravages of mosquitoes of incredible ferocity! All our information concerning sport in this strange, volcano-strewn peninsula comes from the account published by Prince Demidoff of his trip there in company with Mr St George Littledale. Their party spent between four and five months on the journey from Europe, out and back again, but

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that was before the completion of the Trans-Siberian railway, and the time could be much shortened in these days. Going by way of Siberia and Vladivostok and thence by ship to Kamchatka, the journey out need not take more than three weeks. The departure of the boats for Petropavlovsk, the chief settlement of the peninsula, fixes the shooting season; one must leave Vladivostok in June, and return in August. Thus not much time is allowed, unless one contemplates a winter in those dreary and hostile regions.

The habitat of the Kamchatkan sheep is perhaps the most peculiar of all the ovis tribe. The high latitude at which he lives seems to compensate for high altitude, for the herds are to be found on the coast at no great height above the sea level. They are common at 3,000 to 4,000 feet on the ranges in the interior during the summer months, but probably all migrate seawards in winter. In summer they inhabit very rugged country, consisting of huge snow fields and bare ridges of volcanic formation. The comparative scarcity of mosquitoes in this zone may tempt the sheep thither during the worst two months. Demidoff considered their habitat in summer to be more like ibex ground than sheep country, so rough was it.

There are considerable difficulties of transport in Kamchatka; the forests of birch, willow, juniper and rhododendron form obstacles of no small account, rivers in flood, and myriads of mosquitoes, add to one's difficulties. Thus it is that an extensive journey is difficult to arrange, and the existence of sheep is only known of in the vicinity of the Avatcha Bay, on which Petropavlovsk lies, and around the extinct volcano of Kamchatskaia Vershina which Demidoff and Littledale visited. They are said to be numerous on the coastal range to the north and south of Petropavlovsk, and Russian travellers report the existence of wild sheep right away up to the Asiatic shores of Bering Straits. Height is not necessary for them, but rather a big zone of country between the forest line and perpetual snow. The forest dwindles to rhododendron scrub at about 3,000 feet in these latitudes, and the snow line is about 4,500 feet. Although the high volcanoes of the Kamchatkan Peninsula, which rise to 8,000 and even 11,000 feet, may grant good protection for game on their lower slopes, they are not necessarily the best ground, some of the smaller ridges being much more frequently inhabited by them. The hunter is certain of getting amongst sheep, if he gives his whole attention to it, and when once found they are, apparently, very



From "Unknown Mongolia."]

[By permission of Hutchinson & Co.

ROCKY UPLIFTS ABOVE THE SIBERIAN FORESTS.



THE HAUNTS OF WAPITI AND ROE-DEER IN THE
SIBERIAN HIGHLANDS.

PLATE LXXIII.

UPPER ASIA

easy to stalk; in fact, Littledale complained that they were no sport at all. Their heads run to $39\frac{1}{4}$ inches, which is the record obtained by Prince Demidoff. An average head seems to be about 35 inches.

Without troubling to hunt especially for bears, many will fall to the rifle of any traveller in Kamchatka; they are very numerous and attain a large size. Caribou, apparently, only come south into the peninsula during winter, and are not there during summer. An expedition into the far north might prove fruitful in interesting specimens of these beasts and of wild sheep, which are known to range along the Arctic coast from the Gulf of Anadir to Kolymsk and the Yerkhoyansk Mountains on the right bank of the Lena; they are even reported from as far west as the Taimyr Peninsula. It will be noticed that in this north-eastern corner of Asia the members of the reindeer and sheep families approximate to the American types of these groups.

DOUGLAS CARRUTHERS.

THE DEER OF ASIA

AFRICA must always remain the happy hunting ground of the man who wishes to obtain the maximum number of heads in the minimum amount of time. The true big game hunter, however, to whom time is of no account, may find in Asia the finest sport and the most magnificent trophies which any continent can offer. Not only do the largest and handsomest of the wild sheep and goats come from the mountain ranges which tempt the adventurous traveller from afar, but the various species of deer present a study at once fascinating and perplexing. Fascinating because few game animals bequeath to the hunter a more imposing and graceful legacy; perplexing owing to the confusion which has for so long prevailed with regard to the distribution and classification of the various species. "Different systematic names are constantly employed to designate the same animal, while different animals have more than once been designated by the same scientific name." In addition to such errors, which frequently occur in the notes and records of travellers and scientists, the works of Russian naturalists, who have had peculiar facilities for studying this branch of zoology, are sealed to all save the expert Russian scholar. Compared, too, with other countries, books dealing with the large game of Central Asia are lamentably scarce.

No one is more aware than I of the pitfalls and difficulties which lie before me in an attempt to make clear to sportsmen the various species and the distribution of Asiatic deer. I can only crave their indulgence for unintentional errors. Impossible as it is when dealing with this subject to avoid technicalities, I have endeavoured to keep clear of them as much as possible. It is difficult to define exactly the position of various races whose range at certain points may coincide, and until much more is known about their characteristics and distribution their names in many cases can only be looked on as provisional. Russian scientists, who have much data at their disposal, might elucidate points which at present remain doubtful. The revision of the numerous scientific names of species of Asiatic deer, begun by Mr Sclater, continued by Sir Victor Brooke and carried on more recently by Mr Lydekker, has reduced the number considerably. By a study of the specimens in the Paris Museum, M. Eugène de Pousargues elucidated several points which had been left obscure and still

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further simplified the reduction of species. The result of his researches he embodied in a paper read before the Fourth International Zoological Congress held at Cambridge, August 23-27, 1898, which is one of the most important contributions to the subject.

In order to facilitate reference I have adopted the scientific names employed in Rowland Ward's "Records of Big Game," though they cannot be regarded as altogether satisfactory. The casual reader may deny that there is anything in a name. Indeed, so long as the same name is universally employed to designate any object of whatever kind, it may be argued that the name itself is of no importance. At the same time it seems absurd to call so essentially Asiatic an animal as the large deer of Central Asia *Cervus canadensis songaricus* or *asiaticus*. Scientists may argue that retention of the term denoting that the species was first recognized in America is essential; the ordinary sportsman, on common-sense grounds, might very well argue that it is absurd. De Pousargues points out that Severtzoff himself, who proposed the combination, recognized its unsuitability and suggested *C. wapiti* as an alternative, and such a suggestion has much to recommend it.

The following chapter is based largely on the researches of Mr Allan Gordon Cameron, to whom I am greatly indebted for much valuable assistance. Mr Cameron's well-known articles on the distribution of deer, which appeared in the "Field" (1901-4), were written before the author had become acquainted with Fr. Th. Koppen's "Das Fehlen des Eich-hörnchens und das vorhandensein des Rehs und des Edelhirsches in der Krim," published in 1883 in the St Petersburg journal, "Beiträge zur Kenntniss des Russischen Reiches und der angrenzenden Länder Asiens." Koppen's essay practically anticipated Mr Cameron's views, though he made a mistake in deriving all the typical stags from one existing species, viz. the Tian Shan wapiti. It seems much more probable that the wapiti and red deer groups are divergent branches of a main stock which became differentiated in Pleistocene times, and before considering their present status it is necessary to trace the steps by which it has been evolved. Having done this I propose to enumerate the different varieties of Asiatic deer, their distribution and characteristics, with some notes on the type of country they inhabit and the usual methods of hunting them.

THE GUN AT HOME AND ABROAD

EARLY HISTORY AND DISTRIBUTION

Central Asia is the original home of the stag. Modern deer (the typical genus *cervus*) are of exclusively Eurasian origin and have existed since Pliocene times in both continents. Asia, however, has always occupied, historically, their geographical centre. From here, though it is impossible to state definitely what transpired, it seems reasonable to suppose that they spread westward and eastward, the two most remote stag forms to-day, geographically speaking, being the red deer of Europe and the wapiti of North America. Until quite recently it was not known that this latter animal existed in Asia, North America being regarded as its true home. Now, however, there is little doubt that it wandered eastward and crossed from one continent to the other by what is at present the Bering Strait. Prior to man's advent the range of elaphine deer was determined mainly by the presence or absence of trees, for deer are essentially forest-loving animals, though forced by circumstances to alter their habits. Originally they existed under physical conditions widely different from those which prevail to-day.

At the present time it is clear that all the forest country throughout the northern hemisphere is associated with mountain ranges, otherwise areas of elevation.

Viewed thus broadly, two wide areas of depression (as they are called by Mr Allan Gordon Cameron) present themselves:

- (1) The North Pacific Ocean;
- (2) The Eurasian Steppes;

and, recognizing these, the deer with which we are dealing fall into three main divisions on orographical lines.

(a) A western section (Euro-Asiatic), which comprises Europe, North Africa and Asia west of the Turkoman Desert. The mountain systems marking the main lines of the watershed have a general linear direction running from east to west. Red deer only are found here.

(b) A central section (Central Asiatic), which comprises the whole of Asia east of the Turkoman Desert. The mountain systems have no general linear direction but are grouped apparently in a chaotic mass. All other representative stags are found here.

(c) An eastern section (American), which comprises North America.

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The mountain systems have a general linear direction from north to south. Wapiti only are found here.

With the last section we have no immediate concern. Generally speaking the Central Asiatic tableland may be described as extending from the basin of the Amu Daria eastwards to the main bend of the Hwang-ho and from the Himalayas north-westward to the Siberian plain. The general distribution of true stags has proceeded in the main along one or other of two determinate lines.

(1) A southern and western line, which may be clearly traced along existing areas of elevation from the Alps to the Himalayas, and

(2) A northern and eastern line which may be traced in the same way from the Rocky Mountains to the Tian Shan.

These lines of travel are interrupted now by the Bering Strait and the Turkoman Desert, which has obliterated the ancient river system formerly linking the Transcaspian forests with those of the Hindu Kush. Volcanic action, which finally culminated in the tremendous upward thrust of the Tibetan plateau, sharply severed the elaphine stock from that of the rusine to the south and the sikine to the east. Not only this. It severed the main elaphine stock itself into two principal branches along the line of the Gobi depression.

(1) The northern branch, the ancestors of the wapitis, found a centre of evolution in the Siberian watershed, whilst

(2) The southern branch found a centre of evolution in the Himalayas, isolating at the same time one or more individual groups which stood outside the main lines of descent and distribution. Of these latter the white-muzzled Tibetan stag (*C. albirostris*) is a conspicuous example.

The range of the red deer in Asia is restricted to the northern provinces of Asiatic Turkey—Asia Minor, Turkish Armenia and Kurdistan—together with North Persia. Their headquarters are the mountain ranges forming the southern barrier of the Black Sea coast, which extend with scarcely a break from the main ridges of the Caucasus to the shores of the Ægean, and the range of the Anti Taurus running from Mount Argæus to Mount Ararat, of which the western slopes are thickly forested. The Brousa district round Mount Olympus in the west and the Erzerum district at the head waters of the Euphrates to the east hold many good stags. Two specimens of deer brought back from the Ak Dagħ, two hundred miles inland from Smyrna, by Mr J. Horlick in 1912, though shot within a comparatively short distance of one another, present marked differences, one being

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referred by Mr Lydekker to the maral, while the other agreed in general characteristics with the ordinary western red deer, though possibly representing a distinct race.

The term "maral," it should be noted, is restricted to the eastern race of red deer, though applied indiscriminately by the Persian and Turki tribes of Asia to large deer of all kinds.

Mr Cameron wrote in 1906 that he considered there were no valid reasons for distinguishing the stag of Eastern Europe from the western red deer. "There has been an uninterrupted distributional movement from east to west, the Caucasian and Asia Minor stag representing most nearly the ancestral and aboriginal form which in former times overspread Europe to the Atlantic seaboard, and which has since become so variously modified by enforced segregation amidst very varied conditions of life." It is indeed impossible to attempt a survey of the *Cervidæ* of Asia without encroaching to some extent on Europe. The late Gustav Radde could draw no definite line of distinction between the two extreme antler forms of the Caucasus, *C. elaphus* and *C. elaphus maral*, which live in close proximity to each other. It is not surprising to find that intermediate transition forms occur. Indeed, the variation in Caucasian antlers is immense. Incidentally it may be mentioned that Carpathian antlers show a stronger tendency to form a cup than do those from the former locality. The body measurements of a fully adult Carpathian or Caucasian stag approximate very closely to those of the North American wapiti and "concur with the fossil remains of the British and German Pleistocene stag." The average clean weight of adult stags in the Kuban Caucasus is from 35 st. to 45 st. Very heavy stags are sometimes killed in Asia Minor, and in the "Field," June 29, 1895, Mr Edward Gilbertson recorded a stag from Mount Olympus of the extraordinary total dead weight of nearly 75 st. The clean weight would have been about 56 st.

Another stag, a seventeen-pointer, killed by this gentleman, scaled a little over 50 st.

"But for the fact that zoologists have so constantly endeavoured to differentiate a large eastern and a small western race of red deer in Europe it would be altogether superfluous to point out that mere size and weight can afford absolutely no grounds for the racial distinction of European stags. . . . Whether we regard the subject historically or geographically, it seems clear enough that existing differences in size

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or weight among European stags are sufficiently explained by conditions of life and lapse of time."

Mr E. N. Buxton, again, in "Short Stalks," writes: "There is no fixed line of demarcation to the west of which the deer can be described as red deer and to the east of which as belonging to some larger race."

The Persian stag is the most easterly of what, broadly speaking, may be called western deer, its range extending to the verge of the Turkoman Desert, which makes a complete break of 350 miles when the fringe of the Central Asiatic stag country begins on the banks of the Amu Daria above Balkh.

The differences between the large wapiti-like deer of this region and the western form of red deer originated at a period when Europe and Asia were separated by a sea, which, at the Pliocene period, occupied the present deserts of Persia, Turcomania and the Kirghiz steppes, thus connecting the latter with the Indian Ocean.

I have attempted to show that while the red deer found on the borders of Asia have much in common with the western *C. elaphus*, having probably descended from the same stock, physical boundaries have separated them from the larger forms of Asiatic deer distributed through the great mountain regions of the interior. Much with regard to these latter, as I have already said, remains to be learned, and the intelligent observations of future travellers and sportsmen will go far towards clearing the mists which at present enshroud them.

My endeavour in the following pages is to make clear what is already known.

VARIETIES OF ASIATIC DEER

SO little material is available (apart from the specimens in Petrograd Museum) and so much has still to be ascertained with regard to the range and distribution of the large deer of Central Asia that several of the following names can only be looked on as provisional.

The Tian Shan wapiti (*Cervus canadensis songaricus*).

This was first described by Dr Severtzoff under the name of *C. maral* var. *songarica*, and subsequently by Dr Blanford, on the evidence of detached antlers obtained by the second Yarkand Mission, as *C. eustephanus*. They are distributed throughout the Tian Shan range and its offshoots. The Ala Tau is their northern limit, though a few stragglers may be found in the Barlik Tagh. To the south the Narin River is approximately their boundary, while to the west they extend to the Issi Kul Lake and the Alexandrovsk range. Eastward they are found at almost the extreme extension of the Tian Shan range, namely the Karlik Tagh.

An adult male reaches a height of about 57 inches at the shoulder, while their general colour is brownish grey tinged with yellow, the head and neck being darker.

The Tian Shan race differs from the American wapiti by the narrower rump patch, which is more orange in colour and does not include the middle line of the tail. This is short and coloured like the back. The general colour, too, is greyer and there is more black on the borders of the rump patch, the thighs and flanks.

The horns are characterized by their thickness, length, dark colour and massive quality. "The beam inclines slightly inwards from the trez tine towards the root of the fourth tine, which is large and bent strongly inwards. At the root of the fourth tine the beam is bent markedly inwards and backwards. All tines on front surface are long, stout, parallel and nearly at right angles to its axis. The upper portion when fully developed carries three tines practically in the same plane as the tip of the fourth tine and nearly in that of the tip of the third tine."

The best measurements run from about 50 inches on outside curve to 60 inches. A typical head carries twelve points, though fourteen or sixteen are not uncommon, and more have been known.



Photo by I

[Evans.

TIAN SHAN WAPITI.

Length on outside curve 60 inches: Circumference of beam $8\frac{1}{2}$ inches: Tip to tip $62\frac{1}{4}$ inches:

Widest inside $45\frac{1}{2}$ inches: Spread 70 inches: Points 10 + 9.

In the possession of Major J. N. Price Wood.

PLATE LXXIV.

VARIETIES OF ASIATIC DEER

The Bactrian wapiti (*C. canadensis bactrianus*) (also called *C. hagenbecki*), has been named on the evidence of a specimen formerly living in the Zoological Gardens at Moscow. It was at first thought to be related to the shou (*C. affinis*), but specimens from Chenkend, Turkestan, afterwards revealed wapiti-like affinities. The colour is light grey, and the dark lip markings distinguish it from other wapitis. In the "Deer of All Lands" it is referred to as the Bokhara deer.

The Altai or Siberian wapiti (*C. canadensis asiaticus*), also known as *C. c. sibiricus*. (Mr Lydekker considers this form would be better known as the Syansk wapiti, the other name no longer being sufficiently definite.)

The type locality appears to be the Syansk and Baikal Mountains, west of Lake Baikal. The northern limit of their range extends, roughly speaking, to about latitude 55 degrees, their southern limit being about latitude 50 degrees, throughout the Syansk Mountains, on both sides of the watershed and the Upper Yenisei basin. To the west their extreme range coincides with the termination of the Altai proper, while to the east they are found in the Lake Baikal region, the Selenga and Angara basins. Radde wrote that this species was found up to and above tree level on the Syansk, Baikal, Apfel and Chingan Mountains, "frequenting the thickest forests and islands on the Amur, but wandering in summer as high up as the glacier of Munku-Sardik and over the bare peaks of the Syansk Mountains." Deer found to the east of Baikalia may not belong to this race, but our knowledge is very imperfect.

The coloration is similar to that of *C. c. songaricus*, but generally lighter.

The horns are less stout and lighter in colour than those from the Tian Shan. The fourth tine inclines outwards rather than inwards, with a slight bend at the tip. The beam at this point curves gradually inwards and backwards. The backward inclination is, however, less marked than in the Tian Shan race. On the front surface of the upper part of the beam there is only one large tine, the fourth, the terminal portion of which forms a long-handled but short-tined fork. This fork inclines inwards from the line of summit of the fourth tine and also somewhat inwards from that of the third tine. Between the third and fourth tines there is no sharp inward angulation of the beam.

The horn measurements are not so big as the former variety, $50\frac{3}{4}$ inches being the longest recorded specimen, a fifteen-pointer. Mr Miller mentions

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the best head he saw as being 50 inches in length and $47\frac{1}{2}$ inches in spread, with twelve well-developed points.

The Obi wapiti (*C. canadensis biedermanni*) comes from the Teletz Lake, at the source of the Obi, and Barnaul, lower down the same valley.

The main beam in the horns of this species is but little curved, forming an almost continuous line with the axis of the fourth tine, which is relatively small. There is no inward bending till the fourth tine, while the tip forms a long-handled fork. As in the Syansk or Altai variety the widest span occurs at the root of the fourth tine. The terminal fork inclines slightly inwards, so that in the front view it is concealed by the fourth tine, which in the Altai race inclines outwards.

The Irtish wapiti (*C. canadensis wachei*) is distinguished by Dr Matschie. The typical locality is the Shingielt Valley, in the neighbourhood of the Black Irtish, near Kobdo.

It is characterized by the very strong incurving of the upper portion of the main beam, which is stout. In consequence of this the base of the terminal fork is situated in nearly the same plane as the root of the trez tine, which bends strongly upwards and inwards. The distance between the trez and the fourth tine is shorter than between the bez and trez. The fourth tine conceals the terminal fork, which consists of two subequal prongs mounted on a relatively short shaft. These two latter races, in the relative shortness of the fourth tine, appear to depart furthest from the normal wapiti type.

Antlers of the first three of these races recognized by Dr Matschie, namely, those from the Tian Shan, the Altai, Siberian or Syansk, and the Obi, agree respectively in general characteristics with antlers from corresponding localities figured by Mr Lydekker in "Deer of All Lands," "Great and Small Game of Europe, West and North Asia and America," and by Mr H. J. Elwes in the Journal of the Linnean Society, 1889.

Dr Matschie provisionally included a wapiti from the Krasnoyarsk district on the Upper Yenisei in the Altai race. Specimens of this wapiti in Count Potocki's preserve in Volhynia are much darker than the other wapiti there, and as the Altai or Syansk variety is stated to be lighter in winter than the Tian Shan race this Krasnoyarsk deer may be a distinct race.

It would seem, however, from a consideration of the orographical



TIAN SHAN WAPITI.

Length on outside curve 51 inches: Circumference $6\frac{1}{2}$ inches: Tip to tip $39\frac{3}{4}$ inches:

Widest inside $40\frac{3}{4}$ inches: Spread $50\frac{1}{2}$ inches: Points 6 + 5.

Locality: Tian Shan Mountains.

Shot by Mr Alfred Ezra.

PLATE LXXV.

VARIETIES OF ASIATIC DEER

features of the region, extremely unlikely that more than one species should come from the Altai. I do not know exactly what material has been available. If only single specimens, subsequent investigations may do much to simplify their classification. These Obi and Irtysh wapiti may be provisionally regarded as local varieties of the Altai race, but I do not think they should be given the rank of sub-species.

The Manchurian wapiti (*C. canadensis xanthopygus*) is found in the Upper Ussuri district of Northern Manchuria. It is also known as *C. bedfordi*.

The general colour in winter is brownish grey, in summer bright reddish brown, with the dark winter mane and underparts of other wapiti.

The antlers are shorter and stouter than in the Tian Shan wapiti, "with the fourth tine relatively smaller in immature specimens, and the portion above it less developed at all ages. In the five-tined antlers of sub-adult stags the tips of the fourth and fifth tines curve towards one another like crabs' claws." The horns of known specimens vary between 30 and 38 inches, with twelve to fifteen points.

Mr R. P. Andrews, in a joint paper with Dr J. A. Allen in the "Bulletin" of the American Museum of Natural History, gives some interesting notes on deer which he hunted in Korea. One was a roebuck which may have been *C. bedfordi* of Manchuria, the other was a large wapiti-like stag which may have been *C. xanthopygus*. Mr Andrews could find no confirmation that any European, other than himself, had ever seen this deer alive.

"It is called by the Koreans of the north *sasami*. It lives in the dense larch forests and comes down to the edge of the marshes to feed early in the morning and late in the afternoon. It is exceedingly shy, and though I hunted it persistently near Nonsatong and other places I saw it only twice, both times being near Nonsatong. Three of them had been feeding on the side of a hill before the sun was up and a few minutes after sunrise lay down to sleep. When I started them they ran down the side of the hill across a marsh, giving me a short but excellent view of them. They appear slightly smaller than the American wapiti, but carry larger antlers. In the afternoon another single specimen was seen, but on neither occasion was I able to get a shot. I heard them bark once, the noise being similar to that of the roedeer, except that it was very much louder, deeper and hoarser. The Koreans sometimes take them by digging pits in their trails, but catch very few. Judging from the tracks and other signs which I saw

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in the forest the animals must be fairly numerous, but are so exceedingly shy that it is very difficult indeed to kill one. The natives said that at Nonsatong the *sasami* remained near the edge of the forest until the vegetation was well started and then retired deeper into the wilderness towards the Paik-tu-san."

Luehdorf's wapiti (*C. canadensis luehdorfi*), named from a specimen coming from Trans-Baikalia, probably from the Bureatish Steppe of Northern Manchuria. The position of this variety is extremely doubtful. In Rowland Ward's "Records of Big Game," seventh edition, the note occurs: "Appears to have been founded on aged specimens of *C. c. xanthopygus*." Mr Elwes owns some horns procured by Herr Dörries in the Chingan Mountains and near the Sutschan river in Manchuria attributed by Mr Lydekker to this race. "Though much smaller than any race of the wapiti with which I am acquainted," to quote Mr Elwes, "they certainly show to some extent the horn character of the wapiti rather than those of the red deer."

Mr Lydekker regarded the race at the time when these horns came to England as more nearly related to the western wapiti from the Pacific Coast, Washington and Vancouver, than to the Tian Shan or Altai race.

Mr Elwes makes the following interesting comment: "If it be admitted that these horns belong to a race of *C. canadensis*, we have this curious fact in geographical distribution, namely, that the race of the West American coast more nearly resembles the East Asiatic race than it does the Rocky Mountain race, which latter, on the other hand, has resemblance to the Altai and Tian Shan race, most widely separated from it in point of distance."

Herr Dörries writes: "There also lives in the neighbourhood of Vladivostok the so-called *Cervus isubra* or *ludorfi*. This prefers the mountain pine forests and is found from Possiet Bay northwards nearly to the mouth of the Amur and westward to the Ussuri country and also in the eastern parts of Manchuria. It lives in little parties of three to ten, and is shyer than *C. dybowskii*, which occurs in parts of its range."

The Yarkand stag (*C. yarcandensis*) is found in the woods on the Yarkand, Tarim River and Maralbashi. M. de Pousargues regards it as a desert variety of *C. wallichi*. It exhibits a large and well-defined light rump patch, which includes the tail, the general colour being light rufous

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fawn. In winter they grow long shaggy coats. "The antlers are usually five tined, but by the development of a third snag to the crown may become six tined. They differ from those of the hangul in that the terminal fork is placed at right angles to the middle line of the head so as to look directly forwards. The fifth tine, which is generally inclined upwards, is larger than the fourth, and the whole upper part of the antlers is often bent forwards in the manner of those of the shou." A good head is about 40 inches on outside curve.

According to Major Cumberland they stand about 55 inches at the shoulder and live in the swamps and grass jungles of the river bank. Bare knolls are found in this kind of country, rising above the grasses, and from them the deer can be spied when on the move in early morning and late evening. They are, however, difficult to get, although on the river flats numbers of deer paths may be seen.

A stag is found in the neighbourhood of the Manas River to the south-east of Ebi Nor which has never yet been killed by a sportsman and which is alluded to by Mr Miller ("Unknown Mongolia," vol. 2, p. 669) as the Dzungarian stag. This deer is probably very closely related to, if not identical with, *C. yarcandensis*.

The shou or Sikhim stag (*C. affinis*) (in the latest edition of Rowland Ward's "Records of Big Game" the shou is named *C. wallichi affinis*) inhabits the upper part of the Chumbi Valley and some of the neighbouring valleys in Bhutan. The winter coat is very much like that of the hangul with a large white rump patch; ears large, tail short and general appearance wapiti-like. The antlers, generally speaking, resemble those of the hangul but are larger. The beam bends suddenly forwards at the trez tine, so that the upper part overhangs the face. The number of points is usually five on each antler, though seven and eight are known. The brow is closer to the coronet than is the case with the hangul. The brow tine is less constantly longer than the bez. The fifth tine is large and inclined inwards. The terminal fork looks almost directly forwards. Full-grown antlers appear to range from about 44 inches to 55 inches.

"The lowest elevation at which they are found, in the Chumbi Valley," writes Captain F. M. Bailey, "is about 9,000 feet. They are very scarce, a few only crossing the ridge which forms the boundary between Chumbi and Bhutan. I have seen them grazing on Lingmotang Plain in May, when the stags had no horns, and in the winter they are to be found in the dense

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pine forests, on the eastern side of the Chumbi Valley; but about December the forest is disturbed by the villagers, who at this time are collecting their winter's supply of fuel, and the stags appear, for the most part, to return eastwards to Bhutan. They rarely cross to the western bank of the Ammo Chu and this river may be said to be the limit of their habitat on the west."

Wallich's deer (*C. wallichi*) is found in Nepal. It was described by Cuvier in 1835 from a native sketch of an animal living in the menagerie at Barrackpore and said to have come from Muktinath, north of Dwalagiri in Nepal. The arrival in England of a specimen, the first ever imported, which was presented by H.M. King George to the Zoological Society and is at present in the gardens, "has made it possible to classify a species which, for nearly a century, has been a puzzle to all systematic workers on the deer." Yellowish grey brown in colour, with pale legs, a very short white tail, and a large white caudal disc, a full-grown stag stands about 51 inches at the shoulder. The antlers of the specimen under discussion are short but massive, and in 1913 and 1914 carried ten points, a normal head. They resemble those of a hangul and have not the characteristic forward tendency of the shou. Length (1913), 37 inches; beam, $5\frac{7}{8}$ inches. This particular animal was caught as a fawn near Lake Mansarowar, in the upper reaches of the Sanpo Valley, at an elevation of about 6,300 feet. It was in its second year in 1909.

Thorold's deer (*C. albirostris*) was originally described by Przewalski, two examples being subsequently obtained by Dr Thorold about 200 miles to the north-east of Lhasa. They were secured at an elevation of about 13,500 feet, in the snow among brushwood just above the forest. About the same size as the hangul it is distinguished by the smooth, flattened antlers, which lack the bez tine and have a wapiti-like appearance. The trez is nearly in the same plane with the tines above it. The tine coming third in this species (but fourth in those with the bez developed) is longer than the others. The antlers bend backwards at the origin of the trez tine. The number of points on each antler is either four or five. A pure white muzzle and chin and white inner surface to the ears are equally distinctive. The hair on the middle of the back is reversed, forming an apparent hump on the withers. The tail is short and included in the large straw-coloured rump patch. The hairs on the body somewhat resemble those of the musk deer. This species has also been called *C. nariyanus* and *C. thoroldi*.



JAPANESE SIKA (wild specimen).

Length on outside curve $25\frac{3}{8}$ inches: Circumference $4\frac{1}{8}$ inches: Tip to tip $20\frac{1}{4}$ inches: Points 4 + 4.

Locality: Japan.

In the Collection of Sir Edmund G. Loder, Bart.

PLATE LXXVI.

VARIETIES OF ASIATIC DEER

The Persian red deer (*C. elaphus maral*) is abundant in the forests of the Caspian provinces of Persia, ranging from Astarabad through North-East Persia to the mountains flanking the Mashad Valley on the verge of the Kara Kum Desert. Though made the type of the species *C. maral* by Ogilby in 1840, and of a sub-species by Mr Lydekker in 1898, *C. elaphus maral*, it is probably less known in detail than any. As it is being fully dealt with by another writer in the present volume, I will say nothing more about it.

McNeill's deer (*C. macneilli*) I have already alluded to in the chapter on Chinese game.

The milu or Père David's deer (*Elaphurus davidianus*). I have dealt with this animal in the chapter on Chinese game.

The Sikas are readily distinguished from the elaphine group by their spotted coloration and comparatively simple antlers, which usually carry four tines on each horn.

The Sikas, the Elaphine and the Damine groups are all three descended from Pliocene ancestors with sika-like antlers, the modern sikas being nearest to the ancestral type.

They are distributed throughout Northern China, Manchuria and Japan and the Liu Kiu Islands, where they are represented by two or three races, differing chiefly in size.

C. sica typicus, of Japan and North China, varies in height from about 32 inches to 34 inches; *C. s. manchuricus*, a larger animal, being about 39 inches. The Formosan species is slightly larger than the Japanese variety.

Japanese sika are beautiful little animals and have been acclimatized in parks in Great Britain, where they have been known to cross with red deer.

The Japanese sika (*C. s. typicus*) has a bright chestnut coat, longitudinally spotted, turning to a uniform blackish brown in winter. Occasionally spots are found at this time of the year on the hinds. When in the velvet the antlers are a light chestnut red, with black tips. The black bordered white rump patch is very distinct. The bucks utter a kind of whistle.

The Manchurian sika (*C. s. manchuricus*). This species, as has been said,

THE GUN AT HOME AND ABROAD

is bigger, the white caudal area is not so large, and completely bordered with black. The does frequently retain a tinge of red and spots on the hindquarters.

The Formosan sika (*C. s. taëvanus*) is light chestnut in summer, with large white spots, which are distinctly retained in the winter coat, and a black stripe on the back and tail very strongly marked.

The Pekin sika or Dybowski's deer (*C. s. hortulorum*). I have dealt with this species fully in the chapter on Chinese game.

The smaller southern race, *C. hortulorum kopschi*, which is found in the neighbourhood of the Yangtse, has a dark line down the back, which is absent in the larger animal. I have dealt with it in the chapter on Chinese game.

The Mandarin sika (*C. mandarinus*) is a doubtful species known by a specimen in the museum in Paris. Possibly it may be identical with the Pekin sika.

The Mesopotamian fallow deer (*C. [Dama] mesopotamicus*) is larger and lighter than the ordinary fallow deer, carrying a different type of antler. So far as I know they have not been hunted to any extent by Europeans. They are found in parts of Northern Asia Minor and the mountains of Luristan in Mesopotamian Persia.

Other Asiatic deer which it is unnecessary for me to specify more fully, as they are dealt with by other writers in the present volume, are:

The Elk (*Alces machlis bedfordiæ*) of Eastern Siberia, with which my friend, Mr J. G. Millais, is dealing.

The Hangul or Kashmir Barasingh (*C. cashmirianus* or *C. hangul*).

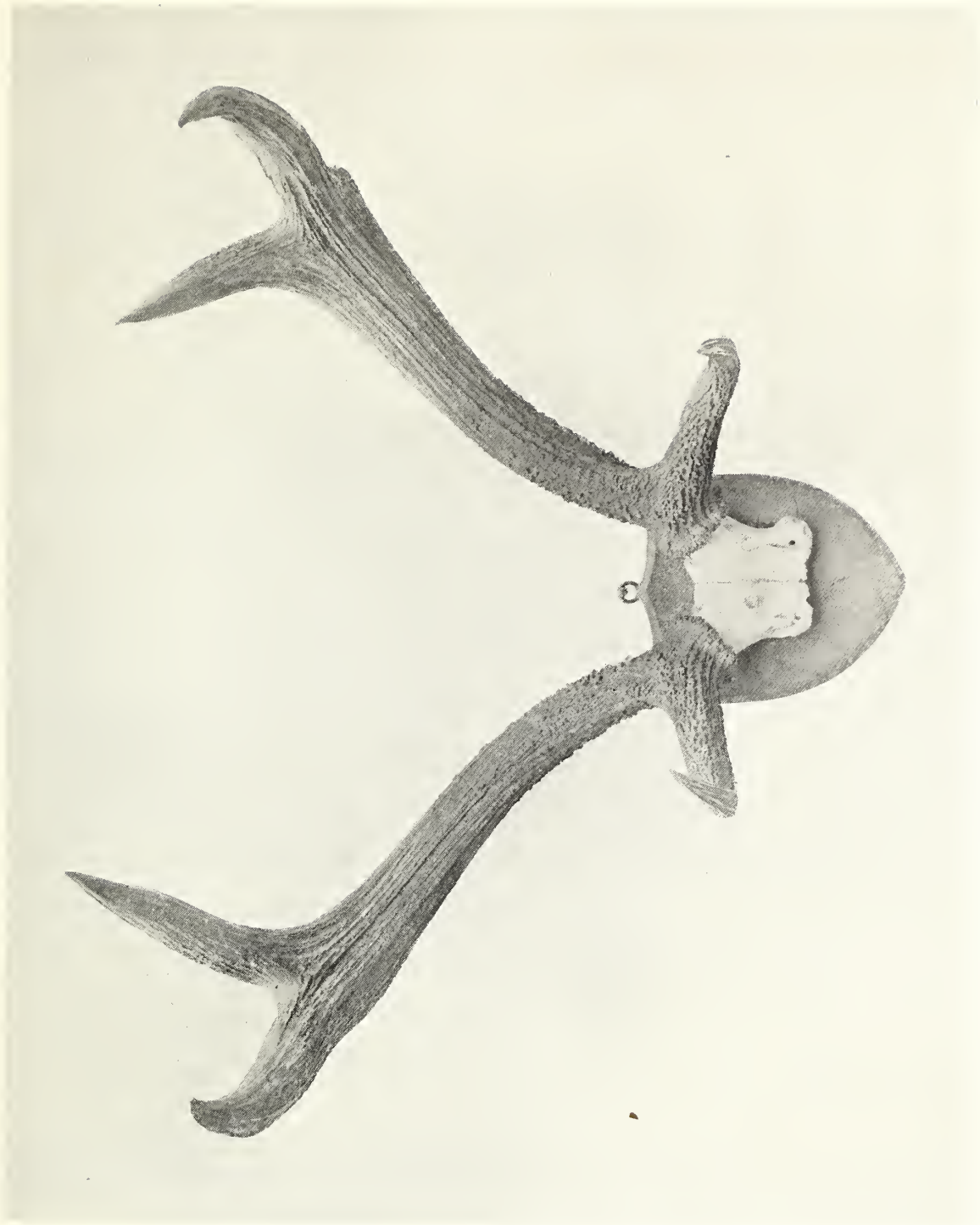
The Sambur (*C. [Rusa] unicolor*) of which several races are recognized. *C. u. dejeani* comes from Western China and carries very massive antlers, which show a tendency to develop small supplemental snags.

The Rusa (*C. hippelaphus typicus* and *moluccensis*), which is found in Java, the Moluccas and Celebes, standing about the same size as a red deer, though the general form and colour is more like a sambur. They have been introduced into Mauritius and Rodriguez Islands.

The Chital or Axis deer (*C. axis*).

The Hog deer or Para (*C. [Hyelaphus] porcinus*).

The Bavian deer (*C. [Hyelaphus] kuhli*).



VERY MASSIVE SAMBUR HEAD.

Length on outside curve $38\frac{1}{2}$ inches; Circumference above brow line 8 inches; Tip to tip $34\frac{1}{2}$ inches; Points 3 + 3.

In the possession of Sir Edmund G. Loder, Bart.

PLATE LXXVII.

VARIETIES OF ASIATIC DEER

The Barasingh or Swamp deer (*C. [Rucervus] duvauceli*), which must not be confused with the Kashmir hangul.

Schomburgk's deer (*C. [Rucervus] schomburgki*), a magnificent animal, inhabiting Northern Siam, which has never been killed by a white man.

The Thamin, Brow-antlered, or Eld's deer (*C. [Rucervus] eldi*) from Burma, Manipur and Siam.

The Muntjac or Barking deer (*Cervulus muntjac*), of which many varieties are recognized.

The Musk deer or Kastura (*Moschus sifanicus*).

THE PRESENT CONDITION OF ASIATIC WAPITI



WING chiefly to the persecution of native hunters, who are encouraged by the value put on the immature horns by the Chinese, the fine deer of Central Asia are rapidly being exterminated. This is the real reason why good heads are so difficult to procure and why the pursuit of large deer in districts under Chinese influence is attended by so much disappointment. The introduction of modern rifles, the gradually increasing nomadic population, swollen not only by the increasing birth-rate but by the pressure of the Russian population who migrate to the Chinese side of the border, tend to drive the deer into the most remote and inaccessible retreats they can find. They are now rarely to be met with in the lower parts of the upper foothills. In the roughest of country, however, where the forest trees cling to the most precipitous and steep hillsides and where even the natives do not penetrate save for the sole purpose of hunting, there are still magnificent heads awaiting the patient and indefatigable hunter. During the daytime they lurk in the thickest and most inaccessible woods, from which they venture only as the shadows are gathering, to plunge once more into their recesses with the first gleams of the newly awakened day.

A good deal of the forest country of the Altai and Upper Yenisei region is rather different in character to the Tian Shan. The wapiti, being scarcer than *C. c. songaricus* and spread over a vast area of almost continuous forest, are much harder to see and get at, though found at a lower elevation and on the flats as well as the hillsides. Their pursuit, in fact, resembles that of the North American wapiti.

In many parts of Central Asia herds of tame wapiti are kept, usually by the chiefs, who make a very profitable business by selling the horns when in velvet. They are sawn off the unfortunate animal's head before their growth is complete. The manner in which the owners perform this operation is as follows: A small wooden enclosure is constructed in one corner of the paddock with a narrow passage sunk in the ground to a depth corresponding to the animal's height. The stag is driven into this, when a strong bar is fastened behind his neck, and he is firmly fastened down, only his head appearing above ground. After the horns have been sawn off

THE PRESENT CONDITION OF ASIATIC WAPITI

they are dried and sent to China. An average head fetches from 100 to 120 roubles (£10 to £12). In China the horns are crushed into powder and used as a medicine, often for women's diseases. In a former chapter I have given some particulars of this deer-horn trade.

Speaking of a spot which he visited called Sabie, in the basin of the Upper Yenisei, Mr J. H. Miller writes:

"Sabie is situated on the edge of a fine game country; in fact, wapiti come so close to the village that it is an easy and a profitable undertaking to capture the younger animals alive. These the colonists keep in enclosures (as is the custom in all localities along the Russo-Chinese frontier where wapiti exist), and take a yearly tribute from the stags in the shape of their soft horns when in velvet. The nearness of the Chinese markets, to which these horns find their way, as well as the existence of many wild wapiti, has caused Sabie to be a flourishing settlement. The inhabitants told us that during the winter they employed the Uriankhai, owing to their exceptional skill in forest lore, to catch the wapiti. The method they employed was to dig pitfalls and to attract the stags to the locality by distributing salt in the neighbourhood; but the pitfalls they only found to be successful so long as the snow covered the ground. The mountains to the south and south-west were the best ground for wapiti, and we noticed their traces quite close to the village on the opposite banks of the Beikem. The horns, when sawn off, are boiled in weak tea as a preservative, and then sent to Chakul on the Ulukem, where they pass into the hands of Chinese merchants. The value of the soft antlers to the Chinese is well demonstrated by the price paid for them. At Chakul they were sold in bulk at the rate of ten shillings for a pound weight of horn, while at other places on the frontier we heard of hunters who got twenty or twenty-five pounds for a heavy pair of horns."

Wapiti in Asia are almost invariably hunted by Europeans during the rutting season, when their long-drawn bugling roars denote the position of the best stags. The roar itself varies. Mr Church describes the call of the Tian Shan wapiti as a scream. According to the musical notation of the rutting call of a stag copied by Mr H. J. Elwes from Radde's "*Reisen im Süden von ost Sibirien*," the call of the Altai wapiti is more of a "bugle," like that of the American wapiti, than a "roar" like that of a European stag. The two sounds are quite distinct; the former I have attempted to describe elsewhere as "a kind of loud whistling through a coach horn."

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As a matter of fact native shikaris attempt to imitate the call with a pair of gun barrels when they are handy. The call of a European stag is much more a yawning roar, ending in a succession of deep grunts.

The Kansu deer, in spite of its wapiti-like antlers, is a relative of the Kashmir hangul, as is the Szechuan *C. macneilli*. Both these deer utter a call more resembling a roar than a bugle, though I have heard the former give the suspicion of a bugle at the end of the call. In other words, their cry is to some extent, as Mr Lydekker has pointed out, intermediate between that of a red deer and a wapiti. It would add greatly to our knowledge if sportsmen and travellers in unknown regions of Central Asia, who have opportunities of doing so, would carefully note the rutting call of any deer they encounter.

Mr Charles Howard Bury has kindly sent me the following notes on the Tian Shan wapiti:

“Their favourite food seems to be willow leaves, both green and when dead on the ground. They break off whole branches and eat them. They are scattered all over the country and in the most unexpected places. I have met with them miles away from any trees and near glaciers. I came across them several times when after ibex and close to ibex ground. Their horns are in velvet till about August 25, when they seem to go back again into the willow thickets, only showing themselves in the open at sunrise and sunset. They are very timid, and one shot fired in the valley will drive every animal out of it. I never saw a stag with more than six hinds during the rutting season, the average number being three or four. At that time of year their skins are very oily, as the pores seem to exude some kind of brown oil. I am told they start calling about the beginning of September, though this varies with the season, and continue for about a month. I have found shed wapiti horns at over 13,000 feet.”

Owing to the roughness of the ground they inhabit the sportsman can only hope to obtain a shot at a small percentage of those stags which he sees and hears calling. I only know one man who, as he puts it,

“has been foolish enough to hunt wapiti in the Tian Shan in mid-winter, late December and early January. At that season in all the lower forests and valleys the snow lies very deep, to avoid which the wapiti move up to the top edge of the timber, where it begins to thin out. Here the wind keeps the exposed parts pretty clear of snow and they can either scratch through to the grass or feed on the twigs of

THE PRESENT CONDITION OF ASIATIC WAPITI

small bushes which stand up through the snow. I hunted for about ten days, most of the time sleeping under the spruces, as we could not get laden horses up far enough. I saw several poor stags, and one beauty in a herd of five (why do you make me rake up such tantalizing memories!). From what my old hunter said and what I saw the stags in winter rarely collect into herds of more than from eight to ten, though he had seen as many as twenty. Winter is not the time to hunt them! It is not only that the cold is so bad (10 degrees to 20 degrees below zero), but the rough, snow-clad hillsides make moving about such very slow work. Of course, if one does have the luck to come on a big herd there is pretty sure to be a real big one in it. I saw thousands of roe, but of course without horns."

With regard to weapons the true small-bore rifles are not quite heavy enough for the larger varieties of Asiatic deer, unless the bullet is placed exactly in the right place. Every one has his own opinion on a question of this sort and I merely give mine for what it is worth. A '350 Magnum is an excellent weapon.

To travel in Central Asia it is essential to procure Russian passports which must be applied for some months before starting and the exact route the sportsman intends to follow defined. This is most important, as the Russian officials at once prohibit any attempt at varying or enlarging the scope of the journey defined in the passport. A good guide is essential. As Mr Carruthers is dealing with the game of Asia generally I will not say any more as regards the best method of reaching the hunting grounds, etc.

ROE DEER IN ASIA

W

ITH the possible exception of some of the smaller African mammals, such as the impala or Grant's gazelle, there is no beast of the chase which, for his size, bequeaths to his pursuers so splendid a trophy as the little roebuck. In Scotland, despite the fact that a good roe head is a great deal harder to get than that of a good red deer, he meets with but scurvy treatment at the hands of many so-called sportsmen. Treat him fairly and he will give every bit as good sport as will a war-rantable stag; treat him as vermin and you will derive considerably more amusement from shooting cats with an air-gun, particularly if the preserve you patronize lies in the more thickly populated districts of the metropolis!

It is unfair to our own European roe to compare him with the magnificent specimens which come from Central Asia. No such comparison indeed is possible, for no European head ever compared in measurements with those of the best Asiatic specimens. In Asia, dwelling amid natural surroundings and circumscribed by no artificial restrictions, the roe must of necessity be accorded the sportsmanlike treatment he deserves, and under such conditions he ranks high as a beast of the chase.

In many parts of Central Asia the natives hawk roe with golden eagles, and the sport is most picturesque. I have seen these mounted falconers with their eagles, but have never had an opportunity of watching them when engaged in pursuit of game.

The common roe deer (*Capreolus caprea*) is found in the Southern Caucasus and possibly Persia; in the northern part of the range its place is taken by the larger Asiatic roe (*C. pygargus*), which stands from 30 inches to 34 inches at the shoulder. The ears of this variety are shorter and more hairy, the white rump patch is larger and the horns may attain a length in the Tian Shan of nearly 19 inches. It is found also in the Altai and from the mountains of Turkestan to Eastern Siberia. The horns are, typically, similar to the European variety but usually rougher and with more numerous points and "snags." Mr Charles Howard Bury recently killed one with no less than sixteen points with a length of 15 inches, of which I include a drawing. The best which I have seen personally is one killed by Colonel C. S. Wood, a perfect normal head, beautifully rough, with a length of 17 inches, and six long, well-developed points. Various



From a Drawing]

TIAN SHAN ROE.

[by H. F. Wallace.

Shot by Mr Charles Howard Bury.

PLATE LXXVIII.

ROE DEER IN ASIA

types of horn are found, from the more or less straight European-like variety to a widely divergent, many-pointed head, with, very often, the interior surface of the back tines almost facing and very close together at the tips. The Tian Shan race is known as *C. p. tianshanicus*.

Professor Noack, in "Der Weidmann," August 21, 1891, placed on record the following notes, partly furnished by Herr Dörries of the Zoological Gardens at Hamburg, of the habits of Siberian roe:

"Change of coat usually takes place about the latter end of April, though dependent to some extent on the season. By the end of September the winter coat is fully grown. The rut takes place in September when the bucks utter a loud and deep toned cry. In summer they are to be found in copses and open meadows, where they can wallow in the marshes or swim in neighbouring lakes. In winter they return to the mountain forests and consort with herds of larger deer. When the snow comes in November the roe collect in large herds, numbering from 300 to 500, and soon after migrate southwards into Manchuria, whence they return about the end of March or beginning of April. Enormous numbers are slaughtered at this season on the Ussuri River by native hunters."

The altitude at which they are found varies considerably in the Tian Shan, ranging from about 4,000 feet to 10,000 feet, and they are found of the same sort of country in which they are to be met with in Scotland, river flats, long grass, thickets, and, late in the season, as I have remarked, forests. At the higher altitudes the ground they frequent is extremely rough and precipitous. In winter they are harassed a good deal by wolves. They are met with in the same country as bear and wapiti, and Colonel Wood tells me he has seen them when after ibex. In July and August the bucks are usually alone, the does in twos and threes. Towards September, the sexes mingle, the bucks shedding towards the end of November. The parties vary in numbers from four or five to a dozen animals, as many as five bucks, of which two were shootable, having been seen together. Abnormalities are frequent. The proportion of first-class bucks does not appear to be very large. Their vitality is, one would imagine, greater than that of the European roe. Mr Church mentions a buck which he shot right through the body being found on the following day still alive, though unable to walk. The summer coats are very red, particularly those of the does. Colonel Wood tells me that from the sound the natives are unable to tell whether

THE GUN AT HOME AND ABROAD

a buck or a doe is "barking" with any certainty, though in this he differs from Mr Church, who states that the buck's call is so much more guttural that it might be made by a different animal altogether.

The Manchurian roe (*C. bedfordi*) is very closely related to our European roe, though the coat may be slightly redder, both in winter and summer. The summer coat particularly is very vivid in colouring. Manchurian roe, which I saw in the then recently established zoological gardens in Peking in 1907, struck me as being extraordinarily red. The horns are identical with, though rather larger than those of European roe.

The Kansu roe is now distinguished as *C. melanotis*. I have dealt very fully with this animal in the chapter on Chinese game.

Any rifle of about '275 bore is a good weapon. Roe are seldom hunted systematically by sportsmen in Asia, who prefer reserving their energies for the wapiti.

For permission to use the photograph of his fine wapiti head I am indebted to Major Price Wood; for that of the shou to Sir Edmund Loder; and to Mr Charles Howard Bury, Colonel C. S. Wood, the Editor of "Country Life," and Rowland Ward, Ltd, for the other photographs and drawings.

In the compilation of the foregoing chapters I have consulted the following:

- Deer of all Lands and Big Game of Europe, West and North Asia and America*, by R. Lydekker; also his notes on Dr Paul Matschie's researches, published originally in *Sitzungsberichte der Gessellschaft Naturforschen der Freunde, Berlin*.
Some Notes on the Asiatic Wapiti, P.Z.S., 1913.
Zoology and Botany of the Altai Mountains (Journal of Linnean Society, 1899), by H. J. Elwes.
Notes on Deer (Journal of the Bombay Natural History Society), by Captain F. M. Bailey.
On a Rare Stag from Nepal, P.Z.S., 1912, by R. I. Pocock.
Étude sur les Ruminants de l'Asie Centrale, by the late Eugène de Pousargues. Vol. xi, Memoires Soc. Zool. de France, 1898.
Mammals of Turkestan (Annals and Magazine of Natural History, ser. 4, v, xviii), by Dr N. Severtzoff.
Unknown Mongolia, Douglas Carruthers and J. H. Miller.
Short Stalks, E. N. Buxton.
Chinese Turkestan, P. W. Church.

ROE DEER IN ASIA

Hunting Trips in the Caucasus, Prince Demidoff.

After Wild Sheep in the Altai and Mongolia, Prince Demidoff.

Across the Roof of the World, P. T. Etherton.

Sport on the Pamir Steppes, Major Cumberland.

By Mountain, Lake and Plain, Major Kennion.

Travel and Sport in Turkestan, Major Price Wood.

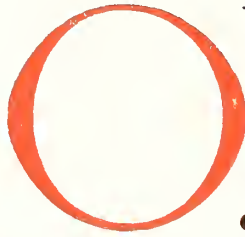
Big Game Shooting, Country Life Library.

Records of Big Game, Rowland Ward.

I must particularly thank Mr Allan Gordon Cameron for the help he has kindly afforded me, not only by giving me access to his notes, articles and private correspondence, but by looking through my MS. before publication.

H. F. WALLACE.

THE ASIATIC REINDEER AND ELK



OUR knowledge of the local races of reindeer and elk inhabiting Europe and North America is now considerable; and, beyond the "buffer" races which embrace characters belonging to one or more of the local races and whose acceptance as sub-species may always be subject to doubt according to the individual opinion of naturalists, they are now fairly well known and have been set forth in the present and previous volumes of this series. The same, however, cannot be said of the Asiatic races of reindeer and elk owing to great paucity of specimens in public and private collections. Horns and skulls of nearly all the local races of these Asiatic deer do exist in British collections; but skins of undoubted authenticity, with full data of locality, etc., are extremely rare, and in most instances have not been collected by sportsmen or naturalists.

With regard to reindeer, Northern and North Central Asia are nearly as rich as North America, with the exception that whilst wild races occur over nearly the whole of the northern continent they in no way compare with the vast numbers that are domesticated and used by native tribes such as the Samoyedes, the Yenesei highlanders and forest dwellers, the Mongolian Chinese, the Tunguses, the natives of the Lena, Okhotsk, Kamchatka and the inhabitants of the Chukchi Peninsula.

The reasons for this are apparent. By nature the Esquimaux and northern Red Indians of North America have ever been merely destroyers of game, although living for the most part and finding all the necessities of life in the reindeer (caribou). It is true the American Government* and Dr Grenfell in Labrador have set an example by teaching the natives of the north the advantages of preserving reindeer and using them as the Lapps, Samoyedes and Chukchi have done for centuries; but all the history of the past has established the fact that the Indians and the Esquimaux took no thought for the morrow and merely feasted in times of plenty and starved in times of scarcity. This method, owing to the abundance of reindeer at most seasons, has worked fairly well for these nomads; but the introduction of the modern rifle and the coming of the white man to the desolate shores of North America have caused such heavy inroads to be made on the game that, unless some methods of preservation or

*The Canadian Government have recently sent a herd of European reindeer to Hudson's Bay.



Photo lent by]

[Mr J. G. Millais.

OKOTSK REINDEER (Winter pelage).

PLATE LXXIX.

THE ASIATIC REINDEER AND ELK

economy are introduced, the reindeer will in time go the way of the musk ox, the buffalo and the pronghorn.

Before passing on to a brief description of the reindeer of Asia it may be well to say a few words of the native peoples of the Asiatic continent who live exclusively on, or use for trading, the different races of reindeer.

THE CHUKCHIS.—These people are divided into two classes, known as the “Reindeer” and the “Dog” Chukchis. The latter inhabit the coast-line from east of Kolimsk to Bering Straits and use dogs for travel and trading. They also live to a great extent on the walrus. The “Reindeer” Chukchis inhabit the timber and hills just beyond the coast and south for nearly 200 miles, their southern boundaries being contiguous to the Koriaks.

THE KORIAKS.—These natives occupy a country about 800 by 300 miles. These are exclusively reindeer people.

THE LAMUTS are a small buffer race in between the Kamchatka and Koriak land. They are half dog and half reindeer users.

THE KAMCHATDALES, being the inhabitants of Kamchatka, are exclusively dog people, though there are many wild reindeer in the mountains.

THE OKHOTSKIS.—In all parts of the interior and for travel and trading reindeer are largely used, but Russian ponies are also in request.

THE CHUNCHUSES are great nomadic traders, and brigands when it suits them. They wander over an immense area, from the Stanovoi Mountains and Southern Okhotsk, throughout Yakutsk, as far west as Irkutsk and Lake Baikal, and south as far as the Amur River. They largely use reindeer both for riding and transport.

THE CHINESE MONGOLIANS, though mainly horsemen, also use a few reindeer in the northern limits of their territory.

THE SOYOTES.—A race of Tartar origin, living in the upper parts of the Yenesei, in Chinese territory, and recently discovered by Messrs Miller and Carruthers, have large herds of reindeer.

THE SAMOYEDES, of the Yalmal and Taimur Peninsulas, are all reindeer people.

THE YAKUTS, who are mainly hunters and trappers in the interior, have large herds of reindeer in the Lena delta and live to a great extent on the wild reindeer.

THE SAMOYEDES OF THE URALS have small herds of reindeer and use the tame ones in autumn to stalk the wild herds.

THE GUN AT HOME AND ABROAD

The Northern Asian reindeer are abundant in all the coast and tundra lands from the point where the Urals touch the Arctic Ocean to Bering Straits. Reindeer are also found in a deteriorated form and in small numbers in nearly all the islands of the Arctic Sea.

Reindeer extend from the Arctic littoral as far down as the forest zone. They are found in the mountains of South Siberia. On the Urals they go down as far as 52° N. lat., on the Altai to 49°, on the Sayan and Stanovoi chain to 53°, and in the Amur region they come to the mouth of the Ussuri under 49° N. lat. (Wright). In all the forest and mountain region north of this they are abundant in suitable localities, and are for the most part domesticated by the natives of Okhotsk, Kamchatka, the Stanovoi chain, the Verkoyansk, and the low hills near the north coast inhabited by the Koriaks. North of Vladivostok it has been estimated (Wright) that there were in 1903 no fewer than 190,608 reindeer.

Reindeer are found both wild and domesticated in some numbers in the forest regions of the Upper Yenesei. In Chinese Siberia there are also numerous domesticated herds, and there are probably wild herds in the mountains. In the Busk Mountains of Tomsk in Siberia there is a new race of a distinct type which I will presently describe. Throughout the Central Altai Mountains there are said to be a few wild reindeer, but I have not seen specimens. In the land of the Tunguses reindeer are abundant and for the most part domesticated. The Tungus tribesmen range over immense distances with their riding reindeer, coming as far east as Baikal, west almost to Vladivostok, and north into Okhotsk, where they purchase the great reindeer of that country from the natives. Okhotsk has numbers of reindeer of a very large size, almost as big as *T. r. osborni*, and these are used as beasts of burden and for riding as frequently as the Russian ponies. There are also herds of wild reindeer, similar to the tame ones, on the mountains of Okhotsk. A similar reindeer of large size occurs in the mountains of Kamchatka and in the interior in the large chain of mountains stretching from the Aldan River north to the Verskoyansk Mountains. In the peninsula between the Kara Sea and the mouth of the Obi are thousands of domesticated and a few wild reindeer very similar to those inhabiting Kolguev and the Russian coast, being somewhat larger than the typical race. Those of the Taimur Peninsula and the tundras at the various mouths of the Lena are scarcely larger than the typical race of Northern Norway and their horns are also similar. Skins, however, will probably bear a closer resemblance to *T. r. arcticus* of North America.



Photo lent by]

OKOTSK REINDEER (Pale variety).

[Mr J. G. Millais.

PLATE LXXX.

THE ASIATIC REINDEER AND ELK

These reindeer emigrate in enormous herds similar to the Arctic caribou of the Canadian barren-lands. From the N. Kolimsk River to the Chukchi Peninsula are enormous herds of reindeer which seem to be quite distinct from the great forest race inhabiting Kamchatka and Okhotsk. Travellers have frequently informed me of the presence of reindeer in the high mountains of the Tian Shan, but we have no proofs that this is the case, although horns are to be seen in such places as Kuldja.

I possess skulls and horns of most of the following local races of Asiatic reindeer, and they exhibit characters which show them to belong to the following sub-specific races, several of which are new.

ASIATIC REINDEER

T. r. lenensis (sub-spec. nov.).—A small reindeer, the neck and under-parts very white (not grey, as so generally the case in the European typical race). The dark flank stripe absent or faintly seen in summer pelage. Pure white examples very common. Horns similar to *T. r. arcticus*, but somewhat shorter. A pure white example in the collection of Mr J. Talbot Clifton seems to be a typical specimen.

Habitat: the Taimur Peninsula, the Lena delta, south to the timber and east probably as far as the Kolimsk.

Vast herds of these reindeer swim to the islands of the Lena delta in early summer to escape the flies and mosquitoes of the mainland and then return south before the ice forms to spend the winter on the edge of the forest belt. The natives meet them on their autumnal migration and kill very large numbers by hiding behind screens in a fashion similarly employed by the Esquimaux and Yellow Knife Indians of Northern Canada.

The Yakuts of the Lena delta call the reindeer *olane* and utilize them for sledge work. George Melville in his interesting work, "In the Lena Delta" (pp. 131-2) thus describes the spring or northward trek of these reindeer and the methods the natives employ to kill them. He says:

"The natives here, and, indeed, all along the coast of Siberia, live upon the game peculiar to each season. In the springtime they lie in their canoes, ambushed under the high river bank, and await the coming of the reindeer, which have favourite crossing-places on their annual migrations to the north. The herd marches across the

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tundra until the water edge is reached, when the leader strikes boldly out for the opposite shore. They wade and swim unmolested until the whole herd is well out in the stream, and then the hunters dash forth in numbers from under cover of the bank, each armed with a long spear or lance, which rests in the crotch of a forked deer-horn placed in the bow of the canoe, in order to keep the spear in readiness and protect it, as well as the occupant, from harm. As the hunters dash whooping and yelling into the midst of the herd, the deer are panic-stricken, and, losing the guidance of their leader, strike out in all directions. Although excellent swimmers, the poor animals, which can fly like the wind over the smooth heath or *tundra*, are now at a disadvantage; for the natives are in their most congenial element, and, nimbly plying their paddles, dart and flash about from one victim to another, working quick and sad havoc among the stately drove with the deadly thrusts of their lances. The action is continued while a living deer is in the water, and, when there is none left, the floating carcasses are towed to shore, when the women and children, if at hand, assist in cleaning and preparing the meat. Meanwhile those of the herd that escaped injury have scampered away in safety until the next crossing is reached; while the fugitive wounded are followed up by the young hunters on the opposite shore, or sometimes are tracked by the dogs.

“In autumn when the herds are wending their way to the south the slaughter is repeated, and thus are two seasons of the hunting year filled in, during which the natives are comparatively well fed.”

T. r. chukchensis (sub-spec. nov.).—As the reindeer of the Lena delta resembles the Arctic reindeer of North America, so does the present sub-species bear a close resemblance in form and horn growth to the reindeer found in the north-eastern corner of the North American continent (*T. r. labradorensis*). They are very large animals, with little or no sign of the flank stripe in summer pelage. Of the winter pelage I have seen no skins or pictures. The horns are long and massive, poorly developed in the brows and bays, but thick and widely palmated in the tops, and in this part of the horn somewhat resemble *T. r. osborni*.

The majority of these reindeer are domesticated by the Reindeer-Chukchis of the interior of the north-east corner of Siberia, stretching from Kolimsk to the Bering Straits. (These people must not be confused with the Chukchis of the actual coast-line, who are known as the Dog-



THE CARIBOU OF THE LENA DISTRICT.

(*Tarandus rangifer lenensis*).

Shot by Mr Talbot Clifton.

PLATE LXXXI.

THE ASIATIC REINDEER AND ELK

Chukchis, few of whom possess reindeer.) So numerous are these animals that it is not unusual to find 10,000 in one herd, and individuals often possess 2,000 or 3,000 reindeer. All of these people are nomads trading with the Russians on the west, the Koriaks in the southern mountains and east across the Bering Straits to North-West Alaska.

These reindeer of the Chukchis seem to be quite a distinct race occupying a place between the small Lena variety and big "stocky" races inhabiting the mountains and forests of Kamchatka and Okhotsk.

The reindeer of the Koriaks who live between Kamchatka and Chukchi land probably present characters intermediate between the races found to the north and the south.

A. Nordenskiöld, in describing the visit of two of his men to a camp of the Reindeer-Chukchis, gives a pleasant picture of the affection of the owners for their deer. He says ("The Voyage of the Vega," vol. ii, pp. 15-16):

"After for the most part a sleepless night, we rose at half-past six next morning. When we came out of the tent we saw all the reindeer advancing in a compact troop. At the head was an old reindeer with large horns, that went forward to his master, who had in the meantime gone to meet the herd, and bade him good-morning by gently rubbing his nose against his master's hands. While this was going on the other reindeer stood drawn up in well-ordered ranks, like the crew in divisions on board a man-of-war. The owner then went forward and saluted every reindeer; they were allowed to stroke his hands with their noses. He on his part took every reindeer by the horn and examined it in the most careful way. After the inspection was ended, at a sign given by the master, the whole herd wheeled round and returned in closed ranks, with the old reindeer in front, to the previous day's pasture."

[The date of this report is March 17, 1879, and one at least of the reindeer is reported as possessing "large horns." This is surely a mistake, for at that date the horns would be very small. Adult males shed their horns early in November.]

Lieut. Nordquist, in a report to Nordenskiöld ("Voyage of the Vega," vol. ii, p. 45), mentions "wild" reindeer in the mountain region, fifteen or twenty miles south of Yinretlin, where they are not common. A few, according to the Chukchis, remain in winter on the hills near the coast, whilst the greater number migrate southwards at this season.

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T. r. sibiricus.—Head, shoulders, and upper parts somewhat paler than the typical race, chest and legs very dark. In the forest regions of the Yenesei the horns are thicker, straighter and shorter than those of the coastal regions. A somewhat larger animal than the European reindeer.

Habitat: the Asiatic Urals, Tobolsk, the Yalmal and Taimur Peninsulas, the Upper Yenesei basin, probably as far as Irkutsk. The Soyotes of the Upper Yenesei ride these reindeer, whilst those of the coastal regions only use them for packing and draught purposes. They were found wild by Messrs Miller and Carruthers in the Upper Yenesei Mountains. About 40 inches is the usual length of horns. I have a specimen from Yenesei $49\frac{1}{2}$ inches.

T. r. buskensis (sub-spec. nov.).—I have always expected to hear of wild reindeer in the region of the Syansk Mountains in Tomsk, and after several failures I obtained specimens from the Busk Mountains near Semipalatinsk in 1913. These represent quite a distinct race of reindeer, more closely allied to the reindeer of Newfoundland than any others I have compared them with. The skulls are short, massive, and, like specimens from Newfoundland, the horns are short, thick and much palmated. The best specimen is 35 inches in length and carries 24 points. The nasal apertures are, however, much smaller. Length of skull, 12 inches. Between zygomatic arches, 9 inches.

T. r. yakutskensis (sub-spec. nov.).—This is the reindeer used by the Chunchuses throughout Yakutsk, Amur region and Transbaikal. It is a somewhat dark, heavy, thick-set animal, with rather short, thick and, as a rule, non-palmated horns. It bears the same relation to the reindeer of Okhotsk that *T. r. montanus* does to *T. r. osborni*. In Okhotsk this sub-species is also found, being introduced there by the Chunchuses, but does not breed with the large local race.

T. r. phylarchus.—This is by far the largest reindeer in the Asiatic continent, being only slightly smaller than *T. r. osborni* of America and *T. r. kolaensis* of Russia. It is a very large, massive animal, capable of carrying a man of 14 stone. The horns are long and thick, but the brows and bays are sometimes well developed, whilst the tops are usually very heavy and furnished with long, irregular points.

Habitat: Kamchatka and Okhotsk east of the Stanovoi Mountains. Numbers of these reindeer are wild in the interior of Kamchatka and Okhotsk. Mr Lance and Mr Scott, the only travellers who have recently penetrated there, have furnished me with photographs.

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Both light and dark varieties occur, some of the dark ones closely resembling *T. r. osborni*. Nearly all have white necks, very dark lower shoulders and legs, whilst some are white and some blackish grey underneath. The black flank stripe is usually well marked.

The small variety (*T. r. yakutskensis*) used by the Chunchuses is also used in Okhotsk and is mainly preferred for riding, whilst the large native deer (*T. r. phylarchus*) is used as a beast of burden, with packs, or killed for food.

The wild deer are killed in this way all over Eastern Asia. Tame deer are driven on the spoor, and when the wild ones are sighted the latter run up to the hunters and are easily shot. Mr Lance informs me that the tame deer are constantly attacked by wolves, who drive them through the forest in flight. Reindeer never stop and fight as elk do, but generally rush to camp when attacked by wolves, and seem to understand that men are their protectors.

A very large reindeer exists on the island of Saghalien and is used for ploughing by the Japanese. It is probably of the foregoing sub-species, having been imported long ago, as ancient Japanese pictures give representations.

Reindeer are found in small numbers on all the largest of the Siberian islands in the Arctic Sea, but no specimens have yet reached us, though there may be some in the Petrograd Museum.

Elk exist in Siberia from the Urals east to Amurland, approximately north of lat. 50°. They inhabit the forest and mountain regions as far north as the timber goes, and in summer go far in the swamp and dwarf wood region immediately south of the tundras. Their habits are identical with the elk of Europe and North America.

Three distinct sub-species of elk are found in Siberia. In the west, from the Yenesei to the Urals, exists a medium-sized elk, certainly larger than its Russian representative but probably closely allied to it. Throughout Central Siberia occurs *Alces machlis bedfordiæ*, a small grey elk, with poor and usually non-palmated antlers. Throughout Yakutsk the large *Alces machlis yakutskensis* is found, where representatives of this race nearly as big as the north-western elk of America, *Alces machlis gigas*, have been obtained. This animal inhabits the whole of Yakutsk, and probably Kamchatka and Koriakland, but up to the present no heads or skins of this northern elk have reached us.

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ASIATIC ELK

Alces machlis niger. (Millais.)—A medium-sized elk, much darker in pelage, with dark upper parts to the legs and whitish under parts. The horns are large and well palmated. I have seen one specimen with 22 points, 48 inches in span. The skull and horns are altogether more massive than European specimens. Habitat: the Yenesei forests and Ural slopes.

Alces machlis bedfordiæ. (Lydekker, "Proc. Zool. Soc.," 1902, p. 107.)—A small grey elk, the legs being greyish white. The horns are usually non-palmated and with four or five prongs, but I have now seen several that are palmated, very similar to inferior specimens of European elk.

The nasal apertures are large, the skull very short.

This elk is found sparingly in the centre Altai and throughout Tomsk. How far east it goes before meeting the large Yakutsk elk is at present unknown.

These elk are killed by the natives by means of pitfalls in May and June, crusting on the spring snow, and stalking in the autumn. Bows, with arrows, and guns are also set for them.

Alces machlis yakutskensis. (Millais, "Field," July 8, 1911.)—A very large elk, dark brown all over except for grey nasal disc, legs brown to the feet. Horns large, well palmated, having as many as 32 points. Prince Demidoff tells me that the animal is as big as Alaskan moose and carries as fine horns, but up to date no specimens have been obtained that could be described as larger than Eastern American moose.

Habitat: the Aldan River (a branch of the Lena), Yakutsk, the Verskoyansk Mountains and Okhotsk. The elk of Kamchatka is probably closely related. In 1903 official Russian figures state that 2,857 elk were killed in Okhotsk, so this sub-species must be fairly numerous in certain districts. My friend, Mr Lance, who is the only Englishman who has seen a freshly-killed specimen, confirms the large size and colour of this sub-species.

J. G. MILLAIS.



Yakutsk Elk. 5.

North-Eastern Siberia.
 Killed near Aldan River. Branch of the Lena.
 by Yakut hunter. 1908.
 points 32.
 J. G. Millais
 from photos.

From a Drawing]

YAKUTSK ELK.

[by J. G. Millais.

PLATE LXXXII.

THE MANCHURIAN TIGER

THE extent of country over which the Long-haired Manchurian or Siberian Tiger (*Felis tigris mongolica*) ranges can only be fixed approximately. Until recently, evidence was forthcoming of the existence of this animal only as far north as the Amur River; but I have been informed on good authority that workmen, employed on the construction of the new railway which the Russian Government is laying along that river, have killed several during the last year or two considerably further north than this. At any rate, one may safely assume that they are to be found from the Amur to the southern extremity of the Peninsula of Korea.

I have heard it asserted that this tiger occurs in the Island of Saghalien, but all evidence I have been able to collect points to the contrary, I think conclusively. Careful statistics are kept by the Russian Government of all furs exported, and according to these no tiger skin has ever been taken from the island. Mr D——, who for many years carried on a large fishing and trading business there, assured me he must have heard of it had a tiger been seen or shot in the island during the last five-and-twenty years, and a Monsieur L——, who spent a winter there, collecting general information on the island and its inhabitants for the French Geographical Society, and whom I had asked to make inquiries on the subject for me, failed to find any evidence of its occurrence there.

Many skins find their way into the market at Pekin, chiefly through traders from the north and north-west, though how far west the range of this race extends is at present uncertain.

Careful inquiries made in the summer of 1899 along the present route of the Siberian Railway, as far as Chita and Niertschinsk on the Amur and thence east along that river as far as Khabarovsk, elicited practically no information, and it was not till my arrival at Blagovastchinsk that I found a Mongolian hunter who had spent most of his life in country many marches to the south, who could give me anything approaching to first-hand news of the long-haired tiger. From him I learnt that he had seen a skin some years before, brought from far away to the south and east, but how far he could not say.

I made further inquiries in vain on my passage down the Amur, and though I interviewed several intelligent *isubra* (wapiti) and bear hunters,

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both Cossack and Mongolian, no one seemed to have heard of tiger except as an animal to be found far away to the east. At last, at a small riverside village about 150 miles from Khabarovsk, two claws, taken from a beast reported to have been killed the previous winter in a range of hills not very far to the south, were brought to me for sale.

At Khabarovsk, of course, plenty of information was forthcoming, and many tales were floating about of the depredations of these animals during the winter in close proximity to, and even in one case within, the town itself. The Governor-General was most obliging, sending for one of the best-known hunters of the neighbourhood, and from him I gathered that though tiger were fairly plentiful between Khabarovsk and Vladivostok, the best ground was reported to be in the neighbourhood of Irma, a small town on the railway where the river of that name runs into the Ussuri, a little more than half-way to Vladivostok. Here what were described by my French-speaking interpreter as "raisins" grow in great abundance, and wild pig, being very partial to them, gather in large numbers to feed on them towards the end of the summer, only dispersing when the first snows remind them that they must be seeking warmer quarters for the winter in the south. It is this gathering that attracts tiger, the long-haired variety being as partial to pig as his cousin further south, and in a good "raisin" year the number of tiger skins brought into market far exceeds the average.

Pursuing my investigations at Irma I learnt that a number of skins were undoubtedly brought in every winter, but it was believed that in most cases their wearers had been accounted for by poison. One, however, I heard of as having been shot in November, 1898, by two half-caste brothers, well known, even as far south as Vladivostok, as daring and successful tiger hunters. Though they were away hunting the local deer (Pekin sika, I think) for their still immature horns, so highly prized by the Chinese for their supposed medicinal virtues, a Government official, who knew them well, told me they had followed three tigers, one of which was the biggest mortal man ever looked upon, for nineteen days, tracking them in the snow, day in and day out, bivouacking most nights on the trail and covering an incredible extent of ground, till they finally ran them down in some mountains some seventy-five versts away and shot two, including the big one. This latter they brought in, frozen stiff as he fell, on a sleigh, and eventually took it in that condition to Vladivostok, where it was purchased by an English firm of general merchants for three hundred roubles. Before the



Photo by]

[Mr Ford G. Barclay.

A PROMISING VALLEY IN THE DIAMOND MOUNTAINS, N.E. KOREA.

PLATE LXXXIII.

THE MANCHURIAN TIGER

skin was removed a tape run along the back, from the tip of the nose to the root of the tail, showed a length of 10 ft. 5 in.

Now a tiger of this size could hardly have been the owner of a tail of less than 3 ft. in length, so we thus get a total measurement of 13 ft. 5 in., as against the record in "Records of Big Game" for the Indian variety of 11 ft. The member of the firm who took the measurements, though a keen sportsman, had had most of his big game experience among bear, and had therefore attached no importance to the tail, which he told me "was tucked away between the legs and therefore difficult to get at."

The late Mr Rowland Ward, to whom I subsequently quoted these figures, assured me he had no difficulty in crediting them, as he believed the skin was identical with one bought in the London market in 1899 by a well-known Englishman, and he had no doubt that this skin must have belonged to an animal measuring very little short of 14 ft.

From inquiries made among fur dealers in Harbin, Vladivostok and Pekin I am inclined to think that the tigers found in the country between Vladivostok and Khabarovsk run bigger and are more numerous than anywhere else, and I feel sure that were anyone, prepared, of course, for a good deal of hardship and hard work, to make an expedition in from Irma at the time of the first snow, while the temperature is still comparatively moderate, he would be well rewarded for his trouble.

It would be advisable to proceed first to Vladivostok, where an interpreter, servants and camp equipment, as well as the latest information, would be procurable.

In October-November, 1911, a German sportsman was lucky enough to kill three tigers in the neighbourhood of Irma in three weeks, and his interpreter, whom I afterwards met in Kamchatka, informed me that had he worked harder, he ought to have shot two, if not three, more. It should be remembered, however, that 1911 was a good "raisin" year and pig were positively swarming.

In 1899 it was still not uncommon to find fresh footprints of tiger on a winter's morning in any of the outlying streets of Vladivostok, and that spring a sportsman, looking for nothing more dangerous than pheasants and woodcock, was suddenly confronted by one of these animals, of the gigantic proportions usually described on such occasions, within five miles of the city.

In the mountainous district between Harbin and Vladivostok a certain

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number are poisoned by the natives every winter, but so dense and continuous is the forest, that nothing but the supremest luck, coupled with the most devoted perseverance, would give a sportsman a chance of a shot.

Hunters, as distinct from poisoners, north of a line drawn between Seoul and the Diamond Mountains south-west of Gensan, on the east coast of Korea, rely almost entirely on tracking in the snow; whereas those I have worked with in the south of the peninsula cannot be induced to attempt it, averring—I give the reason for what it is worth—that the ground echoes the tramp of footsteps more in that country than anywhere else! Be that as it may, of the three or four attempts I have made at snow tracking, none have been successful, though I once jumped the beast I was after three times in the course of the day without seeing him.

Tiger are probably more numerous in the north than in the southern part of Korea, but from my own experience, confirmed by that of other British sportsmen and travellers, it is a much more difficult matter to find one there than in the south. Except in the vicinity of the Yalu River, where the timber is so dense and its extent so vast that hunting would be well nigh impossible, and the Siberian frontier further east, there is little real forest such as a tiger would choose as a more or less permanent haunt; and as these animals are naturally great travellers, it is a matter of chance whether tracks fresh enough to be worth following will be met with.

In the neighbourhood of the foreign mining concessions, near the Yalu, dynamite is or was used with some success by native hunters, a small, specially constructed bomb being somehow concealed in the bait. Lately, however, cases having occurred of Koreans being severely injured by premature explosions, the Japanese police have forbidden the supply of dynamite for this purpose. Drop traps, weighted with stones and huge logs, are very common, and many tigers are accounted for in this way every year.

Europeans and Americans employed on the mines acquire a certain number of skins, and no doubt more are brought into Seoul from the north than the south, but I believe a good many of these come from across the border from Manchuria, where the natives lay down poison wholesale. This is forbidden now in Korea, but even when it was resorted to, the native is so innately lazy that baits—and the same applies to traps—are often not visited for days at a time, and it frequently happens that a carcass will lie



Photo by]

CHIN-DŌ, S. KOREA.

[Mr Ford G. Barclay.

PLATE LXXXIV.

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till semi-putrefaction sets in before it is found and the skin removed. A skin, taken under such conditions, will often dry out apparently in good order; but, alas! for the luckless bargain hunter in Seoul or the Treaty Ports who may have paid anything between £20 and £40 for his trophy, when the skin is immersed in the tan tub at home, hardly a hair will be left on it!

My own most successful hunts have been in the island of Chindo, some thirty miles as the crow flies south-east of the open port of Mokpo, situated at the south-west corner of Korea. It is separated from the mainland by a channel between two and three miles wide, through which the current rushes at such a rate that it is only possible to cross in a large boat for thirty minutes or so at each turn of the tide, and yet tiger most readily face this fierce tide pretty frequently. The island is about the size of the Isle of Wight, and there being very little cover on it when snow is on the ground it can be fairly conclusively ascertained whether tiger are or are not on the island by letting it be generally known among the villagers that authentic news of fresh tiger tracks will be liberally rewarded. On one visit I was greeted with the intelligence that four tigers were there, a male and female of fair size, and two three-year-old females. The first two I secured a day or two later, the other two broke back through the beaters in a drive some twelve miles from the nearest part of the channel. The next morning their tracks were reported in the tidal mud, heading across the Straits for the mainland, but being still sceptical as to tiger facing such a swim in the depth of winter I continued my hunt for ten days, during which no fresh tracks were seen. Three weeks later news of another pair in the island led me back, but though we jumped one I never actually saw more than the footprints. A week later these two were also tracked over the mud towards the Straits and mainland. Early this year (1914) the body of a tiger was washed up on the west coast of Japan south of Matsue, at least 120 miles from the nearest mainland, from whence alone it could have come; yet, as reported in the press, its condition was such that the skin was removed for dressing and parts of the flesh sold for consumption! One wonders if the poor brute may have been some tigrine Pilgrim Father driven from his native land through the persecution of the new conquerors of Korea!

This demand for tiger flesh on the part of the Japanese is a curious survival of barbaric superstition in such a highly civilized race. One of their chief officials sent me an urgent request for a shoulder on hearing of

THE GUN AT HOME AND ABROAD

a successful hunt. This joint for some reason is supposed to possess greater medicinal virtue than any other, and the shoulder blade ground to powder is a certain cure in the most advanced stages of insanity!

When a tiger is killed notice is at once sent to the elders of all villages within a radius of five miles and the body is brought in whole to the village one is staying in.

On the arrival of the elders an almost interminable wrangle ensues as to who are to be the privileged half-dozen to partake of a cupful of the ambrosial liquid left in the abdominal cavity, after the removal of the intestines. When that is settled the gralloch begins.

To see semi-naked or naked savages carousing on such filth is bad enough; but to witness refined and most courteous, white-robed old gentlemen, as many of the villagers in Korea are, drinking it with apparent relish causes one's very gorge to rise.

Among both Chinese and Koreans, tiger's blood is believed to have an extraordinarily rejuvenating effect, greater even than the highly prized wapiti or sika horn, dried when in the velvet, and afterwards ground to powder. One of the old gentlemen referred to above a few days afterwards confessed to me he had found his cupful very hard to swallow, but that there could be no doubt of its efficacy.

Of the twenty odd skins I have seen in South Korea all have been much darker in colour than the half-dozen brought for my inspection in East Siberia, and I was informed by hunters and fur dealers there that the colour varied very little in these northern latitudes. In Seoul and Gensan I have seen both dark and pale skins, though I am told that the pale variety predominate. To my mind the darker furs, though perhaps not quite so thick or so long in fur as the lighter, are by far the handsomer trophy of the two. The skins coming from Peking are mostly of the darker shade, and just now Messrs Rowland Ward have some magnificent specimens which have come into the market from the province of Shansi.

I am inclined to think that the tigers living in Siberia and Manchuria have a slight advantage in size over those whose range lies further south. I have never seen any skins of extraordinary size in Seoul, Gensan or Mokpo, though one sometimes hears of these measuring 12 ft. or more from tip of nose to end of tail; but from all I could learn the natural shape in such cases had been entirely sacrificed in process of drying out. On the other hand, one I killed in 1903 measured as he fell 9 ft. 7 in. between sticks, and the hunters, who seldom belittle an animal they have helped to bag,



Photo by]

PI-NE-SAN, NEAR MOKPO.

[Mr Ford G. Barclay.

PLATE LXXXV.

THE MANCHURIAN TIGER

assured me he was a very ordinary specimen. One indeed averred that ten years before he had been in at the death of one between Mokpo and Fusan that would have measured at least 3 ft more than mine.

South of Korea I seldom heard of tiger being trapped, though outside most villages in the vicinity of wooded hills there will be seen the ruins—I have never seen one set—of what was once a box-trap built of stone, and when in use baited with a live pig or dog. The tiger, on getting far enough into the trap, releases a falling door by stepping on a board connected with the cord holding the door in suspense. Once caught, the poor brute is starved to death, as a hole in its skin might depreciate its value by a yen or two. One trapped near a monastery by some young priests a year or two before my visit had—so the abbot told me—taken more than three weeks dying!

In the happy days before the Japanese occupation and the consequent confiscation of fire-arms, when the depredations of a tiger became too pronounced, the active male inhabitants of the villages in the neighbourhood, perhaps half a dozen, armed with matchlocks, and as many more with heavy spears, would arrange for a day or two's driving in the adjacent hills. Occasionally these hunts were successful, but at any rate they relieved monotony and invariably, whether successful or not, formed an excuse for a glorious drunk on the conclusion of their labours. Sometimes one of the hunters would be mauled or even killed, and more than one of my beaters could show honourable scars gained in this way.

Local hunters, I often found, could give a fairly accurate guess as to where the tiger would make for when moved; but as these stands were usually where the undergrowth was particularly dense the chance of a shot was very much diminished. Twice in one day, as I found by the tracks afterwards, a big tiger passed within a few yards of me and I neither saw nor heard him, though there was little if any snow and the ground was covered with dead leaves.

There seemed at one time to be a general idea among big game hunters—especially those who had done much shooting in India—that the long-haired tiger was a much less dangerous animal to tackle than his southern cousin. It is difficult to understand how such a belief originated, as anyone who has travelled at all in the countries frequented by these animals cannot fail to be impressed with the wholesome dread of the beast evinced by the inhabitants, whether Chinese, Koreans, or Manchurian. One and all testify to the ferocity and cunning of this tiger, and, if one will only listen, many

THE GUN AT HOME AND ABROAD

tales of mauled and killed are poured into one's ears. Personally I have seen two home charges that might fairly be called unprovoked, except for the fact of the tiger being disturbed in his slumbers; and since my first expedition in 1903 one of my best beaters has been killed and another badly mauled by these animals.

I find, too, a very common belief that the Manchurian tiger does not nearly attain to the size of the Indian variety. The figures I have quoted and those in "Records of Big Game" are sufficient answer. In proportion to their length, too, I believe that members of this race are deeper chested than other varieties, and would surely weigh more, length for length.

If asked as to the most likely localities in which a long-haired tiger might be secured, I should certainly advise a young and active man to try Irma, or some other point on the Khabarovsk-Vladivostok Railway, which the latest information received in sporting circles at Vladivostok may indicate as likely to afford the best chance. For an older man, or for one not wishing for quite such hard work as tracking in deep snow, I should recommend the country round Mokpo. Here, though the houses are for the most part filthy and swarming with vermin—I leave out of the question the possibility of tents on account of the cold—fair quarters may be found at the monasteries, around which lie the few small forests left in this timber-denuded land. The hunting will be almost exclusively driving, and without an official letter to the police authorities there may be difficulty in obtaining beaters, especially now that the natives are forbidden to carry fire-arms.

A vast stock of patience will be required and a number of disappointments are inevitable. One winter, in forty-two days' hunting, I myself saw five tigers, and three more were in the beats at one time or another, yet I never got a shot. Yet anyone fortunate enough to slay one of these magnificent animals would, I think, agree with me that the achievement has been well worth all the trouble he has been put to. By chance, of course, a tiger may be happened upon, and I once caught a fleeting glimpse of one I had disturbed while making my way along a rocky ridge to take up my post for a drive. His bed clearly showed that he must have been lying in full view of the monastery at which I happened to be staying.

A well-known American sportsman some ten years ago, while on the march in the Mokpo district, spied a tiger under a ledge of rock, some hundreds of feet above the road, and having made a successful stalk, not

THE MANCHURIAN TIGER

only succeeded in shooting him, but took an excellent photograph as he lay asleep not fifty yards from the camera!

Other districts I have heard recommended are the country south and south-west of Vladivostok, as far as the Korean frontier, and some mountains 150 miles or so north-east of Harbin, in Manchuria; but I have no doubt inquiries from traders or hunters at Vladivostok, Harbin or Khabarovsk would discover many promising hunting-grounds other than those I have indicated. It should be borne in mind, however, that the native of the Far East, whether Korean or Manchu, is at least as prone as those of other countries to pin his faith to some place several marches away which he himself has never visited, rather than his own particular neighbourhood; and the traveller, who listens to these tales too readily, must not be surprised if he finds, on his arrival at the place recommended, that he has had a long and weary march for nothing at all.

FORD BARCLAY.

NORTH AMERICA

THE MOOSE OR FLAT-HORNED ELK

THE eastern moose of North America, *Alces machlis americanus* (Jardine), has all the characteristics of the deer family although it seems to be some survival of a vanished age. Its antlers, however, are unlike other species, being broadly palmated and divided into two sections consisting of front shovel and lateral palm. On each of these it bears a large number of points. It has a very heavy and pendulous muzzle with a small naked and triangular space between the large nostrils, a thick but comparatively short neck, short tail and small tarsal and no metatarsal glands. The female has no horns, but both sexes carry on the throat a "bell." The dewlap is covered with long black hair which varies greatly in different individuals. A big moose is the largest of living deer and exceeds the horse in stature. Two fine bulls which I killed in Ottawa measured 6 feet 6 inches and 6 feet 8 inches at the withers. Both were black on the upper part of the forelegs, neck, withers, breast, shoulders, flanks and rump, pale brown on the muzzle and sides of the face, and black on the chin. The underparts, great part of the hind legs, from the knees to the fetlocks, grey. The colouring of the sexes is much alike. The length of these bulls was 9 feet 6 inches and 9 feet 8 inches respectively, tail 3 inches. There are many records of eastern moose of over 6 feet 8 inches at the shoulder, and one shot in New Brunswick by Carl Rungius, the well-known artist, measured 7 feet at the withers. Mr Thompson Seton ("Life Histories of Northern Animals," Vol. I, p. 145) states that the largest he knows of was a bull shot at Mattawa, Quebec, in 1895, by Dr Hamilton Vreeland and his brother. It stood 7 feet 4 inches at the withers.

The dentition of moose is as follows:

$$\text{Inc. } \frac{0-0}{4-4}; \text{ Can. } \frac{0-0}{0-0}; \text{ prem. } \frac{3-3}{3-3}; \text{ Mol. } \frac{3-3}{3-3}; = 32.$$

Very few hunters have taken scales into the woods for the purpose of weighing wild animals, but the best estimates give dead weight of bulls as between 1,300 and 1,400 lb. Mr Crosby, of Bangor, Maine, says ("Recreation Magazine," January, 1896, p. 89), "I have weighed several moose;

THE MOOSE OR FLAT-HORNED ELK

the heaviest was 1,009 lb., without blood and entrails, which would surely have weighed 250 to 300 lb.”

A moose killed in Maine and weighed by Mr Miller in September, 1892, weighed 1,123 lb. when dressed, which would mean a live weight of about 1,400 lb.

Mr Andrew Stone, who has made a careful study of the moose, thinks that no wild animal in America grows so rapidly as this animal. A calf of one week old measured 37 inches in length, whilst another killed on October 30—that is, five months old—measured 88 inches. Thus a calf grows 41 inches in the period of five months. The rapidity of growth seems to decrease soon after the calf leaves its mother.

Speaking of the weights of moose, he considers that the four quarters of a moose weigh 350 to 400 lb.; whilst he knew of a “fat bull killed near Fort Norman on the Mackenzie whose four quarters weighed 700 lb.” He believes that moose reach maturity at six years (as with other deer), whilst the age to which they live must be pure conjecture.

I have for some years made a special study of the large deer and have in preparation a monograph of the species in which I recognize the typical race and its sub-specific races, which are as follows:

EUROPEAN RACES

Scandinavian Race. *Alces machlis typicus* (Lin., “Syst. Nat.,” ed. 12, Vol. I, p. 92. 1766). Hab., Scandinavia and Finland. Colour, grey with white legs.

Southern Race. *Alces machlis germanicus* (sub-spec. nov.). Hab., East Prussia and the marshes of Pinsk, Poland. Colour, brown and black with grey legs. The horns of the Poland specimens are much finer than those of Northern Europe.

Russian Race. *Alces machlis niger* (sub-spec. nov.). Hab., European Russia and the forest regions of the Yenesei, possibly extending further to the East. Colour, nearly black with grey legs.

ASIATIC RACES

Siberian Race. *Alces machlis bedfordiæ* (Lydekker, “Proc.” Zoo. Soc., Feb. 18, 1902). Hab., Central Siberia. With simple bifurcated antlers, similar to elk found in the high plateaux of Norway. The elk of the Altai frequently carry palmated horns similar to European examples, so it is

THE GUN AT HOME AND ABROAD

doubtful if the simple forked antlers are a permanent character, a point which Mr Lydekker now recognizes.

The Yakutsk Race. *Alces machlis yakutskensis* (Millais, "Field," July 8, 1911). Hab., Yakutsk, Okhotsk and probably Kamchatka. A large blackish brown elk with brown legs, the animal being very similar to the elk of Alaska. The horns are larger than European or Siberian elk and well palmated. So far I have only seen skulls shown of this elk from North-West Siberia, and these are very similar to Russian specimens.

AMERICAN RACES

The East American Race. *Alces machlis americanus* (Jardine, "Nat. Lib.-Mamm.," Vol. III, p. 125, 1835). Hab., America and Canada east of the Rocky Mountains. A blackish brown elk with grey or nearly pure white legs.

The Giant American Race. *Alces machlis gigas* (Miller). Hab., the Alaskan peninsula, Northern Alaska and British Columbia. A very large moose of blackish brown or black colour, with brown legs. A tuft of emerald green hair between the toes. I have included British Columbia as the range of this race, on the authority of Mr Clifford Little, who has shot many specimens both in the Kenai peninsula and in Cassiar, where he states that both animals are identical in size and colour, although the horns of Kenai specimens are far finer. Two bulls, shot by myself in Cassiar, answered in every way to the description of the giant moose. There is every reason to believe that the giant moose extends far to the South in British Columbia, in districts where hunters have not yet penetrated. The moose of Fort George and East Kootenay have not yet been described, but I expect that they will prove to be a smaller local race of the above.

The Yellowstone Race, or Shira's Moose, *Alces machlis shirari*. A small moose, with very dark body markings and blackish legs. A yellowish mane on the top of the neck. Horns as a rule small, but not always so, a specimen with 60-inch horns spread having recently been killed by Carl Rungius near the Yellowstone Park.

Distribution: Montana, Wyoming, Idaho, and probably into South-Eastern British Columbia.

The early French *voyageurs* of the sixteenth century were the first white men to observe the American moose and had some difficulty in giving so strange a beast a name. Wherefore they called it "Une type, un original."

ALASKAN MOOSE (*Alces machlis gigas*)

PLATE LXXXVI.



H. Waldwell 1914

THE MOOSE OR FLAT-HORNED ELK

Hence the names *l'original*, *l'orignat* and *l'orignac* grew into common use amongst them. Charlevoix (1744) speaks of it as "elan," but the early English settlers adopted the Cree or Ojibway Indian name of "moose," said to mean "Twig-eater," which has held good ever since. The Chipe-wyan name is *Ten-neé* and the Sioux *Tahg-chah* or *Tah*.

With the exception of the wapiti and the red deer, the horns of the moose are the most desirable trophy that can fall to the hunter's rifle, and it is cheering to think that whilst nearly all other heads of the highest class are becoming year by year more and more difficult to obtain this is not the case with the moose, which in its north-western range is as abundant as ever it was. Any young hunter going to Alaska for the first time has a chance of obtaining a moose trophy such as our fathers would never have seen or even imagined was in existence.

The following are some of the best moose heads that have been killed in the Kenai Peninsula, Alaska, where the deer are more plentiful and grow finer antlers than in any other locality:

The two which head the list are both 78½ inches (span). The first (said originally to have been 84 inches) now in the Field Columbian Museum at Chicago, and another, said to be the same size, in the possession of Mr Sheard of Tacoma, of which I possess a photo. Neither of these heads are, however, superior to the 74½-inch head shot by Mr A. S. Reed, and now in the National Collection of Heads and Horns at New York. Reckoned by points and breadth of palm this is probably the best in the world, but it may not be better than the head shot by Mr P. Neidieck which I saw and measured in the German court of the Vienna Exhibition in 1910. That is an ideal head, both for quality, beauty and size. Its span is 74 inches. Mr Sheard, of Tacoma, also has a wonderful head of 73¼ inches span and the Duke of Westminster has a grand head of 72 inches, which I bought for his father. Sir Edmund Loder has a massive head of 71 inches with enormous palms, and Captain Radclyffe, Colonel Claude Cane and other English sportsmen also have splendid examples. Mr Maurice Egerton tells me that he saw the head of a moose being brought down the Yukon River a few years ago which was said to be 80 inches across, but unfortunately he had not an opportunity of measuring it. Undoubtedly some wonderful moose exist in the Yukon forests and will yet be obtained. One of 70 inches was killed a few years ago and exhibited at Vancouver.

That giant moose exist in other parts as well as in the Kenai is undoubted. Mr Warburton Pike, whose accuracy cannot be disputed, told

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me that he was hunting one season with Mr A. S. Reed, who killed so many fine trophies in British Columbia and Alaska, at the head of Dease Lake, British Columbia, when Mr Reed shot a bull moose whose head was wider than any previously known. Both Mr Reed and Mr Pike measured it and it was 81 inches across. They stood the head up against their wooden hut and both went out to hunt. When they returned they found the hut and its contents, as well as the moose head, a heap of ashes, the Indians having forgotten to douse the fire before leaving. This must have been a terrible blow to so keen a hunter as Mr Reed.

No eastern moose quite to be compared with the examples of the northwest have yet been killed, though some magnificent examples are in the collections of British and American sportsmen. In 1908 I saw the head of a moose said to be 70 inches in width which had just been killed on a river near Kenora by a local guide. It was somewhat thin in the palm, but of enormous spread, a fault also found in the 68½-inch New Brunswick record head killed by Dr W. L. Munro in October, 1907. A 70-inch head was killed by Mr Lewis Gibb in the Caughnawana Club preserve, Pontiac, Quebec, on October 10, 1906, but I have not seen any representation of it. Certainly all the finest eastern moose heads are from 60 to 65 inches in spread and possess wide palms and numerous points. The first high-class examples to be exhibited in England were shown at the American Exhibition held in London in 1887. These belonged respectively to Mr Otho Shaw and Mr Bierstadt and measured 65 and 64½ inches span; but since that date sportsmen have shot many that were quite as good, but are too numerous to mention. The best eastern moose heads come from the eastern watershed of the Rockies, north of Banff, from which I have seen two of 65-inch spread. Very big heads are sometimes killed about the small rivers north of Kenora in Eastern Manitoba, and occasionally a fine one comes from the Peace River (I have a magnificent example of 64 inches from there). Heads up to 64 inches also occur occasionally in the Tamiskameng and Kippewa district of Ontario, and now and then New Brunswick and Quebec produces a big head. The moose of Eastern Quebec, Southern Labrador and Nova Scotia are, comparatively speaking, small, and Maine now seldom shows a head of over 60 inches. The moose of the Yellowstone, North Wyoming and East Kootenay are also of an inferior type. Freak horns amongst moose are by no means rare, and I have seen forty to fifty examples. One of the commonest variations is "dropped" points, growing downwards from the underside of the palm. An almost common variation in Alaska is the

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double blade in which the palms break into two separate spades, each furnished with a row of points.

Captain Radclyffe has a remarkable head of this description shot by himself in the Kenai Peninsula, and Sir Edmund Loder has another from Eastern Canada.

The size and shape of the antlers of the moose have little relation to the age of the animal, for after the third year they are large, small, palmated or forked according to individual variation.

A young bull moose grows his first pair of horns—two small spikes—in the second summer, casting these the following spring. In the ensuing year he grows two longer prongs of varying length with the ends turned slightly upwards. In each succeeding year there is an addition of points and palmation which may be greatly increased at the fourth year. After this the full head is obtained and the animal is probably at his best at twelve to fourteen years, as with other deer. The adult horns are shed between December and February. In the horns of old moose the palmation is wide, but the points show a tendency to become shorter and blunter as age increases and the quality of horn is impaired with holes and abrasions. Old animals, too, like red deer and wapiti, seem to have some difficulty in shedding the velvet. "Locked" horns, which occur more frequently amongst caribou, wapiti, red deer, white-tailed and mule deer, are very rare. Mr Sheard has a remarkable pair found in Alaska. The "bell" on the throat of the moose is a very peculiar feature and varies much in length. It is merely an elongated piece of skin, full of bloodvessels, and covered with long black hair. It is rare to see a large one in adult bulls. Sometimes it is round and sometimes flat and in some cases of young bulls very much elongated. It is usually about 3 to 5 inches long, exclusive of hair, but I have seen a photo of one killed in Manitoba that was 18 inches long. Cows sometimes have these "bells," in fact, one female, mounted by Mr Darbey, of Winnipeg, of which I possess a photo, has a bell 38 inches long. It does not seem that this bell has any gland or scent, nor is it known that it performs any function for the animal. There is reason to believe that this feature dries up as the age of the animal increases, a surmise that is perhaps correct, as we have never seen "bells" of 12 and 14 inches, which often occur in young bulls, on the necks of adults. Mr Fred Talcott, writing in "Forest and Stream" (March 25, 1899, p. 224) says, in speaking of moose in Roger Williams Park, Providence, Rhode Island, "as the antlers increased the bell also increased until 13 or 14 inches long; and after the antlers were dropped, December 1, the bell decreased in length."

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Formerly the distribution of the moose extended further to the south than at present. At one time it "ranged throughout nearly the whole of New England and New York as far south as the Catskills" (Madison Grant), and it formerly existed in Prince Edward Island. In the west its occurrence in Colorado and Oregon, where heads have been found, is somewhat doubtful. Moose and caribou are always changing their ranges; for instance, the whole of the northern and wooded parts of Ontario and North-Eastern Quebec were, prior to 1886, a woodland caribou range; now this region, which embraces the districts of Lakes Tamiskameng and Kippewa and the country as far north as Abatibi, is a favourite moose country, whilst caribou are almost extinct. So, too, the Kenai Peninsula, now containing a great stock of moose, was said to be devoid of moose prior to 1886.

These ranges probably always contained moose, but both by increase and migration, as well as the abundance of food supply, they have in recent years been found most agreeable to the larger deer. The moose has a vast range in the Northern American continent, extending as it does from Cape Breton to the mouth of the Mackenzie, and the Kenai Peninsula in Alaska. On the eastern side it goes as far north as Labrador, one having been killed at Hamilton Inlet a few years ago. Its southern boundaries are Maine, Minnesota, Idaho, Montana, Wyoming and Southern British Columbia. In all the great forest areas north of this it is abundant, particularly in New Brunswick, Quebec, Ontario, Manitoba, Northern Alberta, British Columbia, Keewatin and the Mackenzie and Peace River basins.

Perhaps nowhere are moose so abundant as at the headwaters of the Liard, Peace, Stickine and Yukon Rivers and all their collateral branches. Indians have told me that moose literally swarm at the head of the Liard River and this is practically confirmed by such recent travellers as Messrs Pike, Andrew Stone and Count Hoyos, who are amongst the few hunters who have penetrated there. Mr Andrew Stone thinks that the ideal moose ranges of the North-West are the Cassiar Mountains, the Upper Liard River, the country round the headwaters of the Macmillan, Stewart and Peel Rivers, as well as the Porcupine and the head of the Colville Rivers in Alaska.

In many cases the increased range of the moose, particularly in the North-West, is due to the dying-out of the Indians. This is notably the case in the Kenai and the headwaters of the Stickine, Liard and Nahanna Rivers where these animals were formerly severely hunted, yet are now very abundant. In Canada the situation is somewhat different, for here



ALASKAN MOOSE.

This specimen, in the possession of Mr W. F. Sheard, and that in the Field Columbian Museum, Chicago, are both 78½ inches in spread, being the widest known examples of this Moose.

THE MOOSE OR FLAT-HORNED ELK

civilization with its hosts of white hunters has driven the moose to the north. In Washington, Idaho, Montana and Lower Canada, moose are almost extinct, though a pleasant circumstance is afforded by their great increase in the Yellowstone Park, where efficient care has yielded a great improvement.

In British Columbia and South-Eastern Alaska they do not approach the coast, but in the Kenai and Alaskan Peninsula they come right down to salt water. At one time moose ranged to the Mackenzie delta and bred there in large numbers, but of recent years great freshets are supposed to have drowned the calves in May. Mr Andrew Stone found few signs of moose there.

The moose is the largest as well as in many ways the most interesting of the deer tribe. It is the hardiest and most capable of self protection of all deer, and will, I fancy, be the last to become extinct in the North American continent. With even fair protection, and that is all it gets in Canada, it can hold its own whilst animals of lesser cunning vanish; for its great ears and nose are ever working, and however stupid it may seem, its faculties of nose, hearing, and brain always stand it in good stead though its eyesight is not good.

Just as the elk in Europe are contented with very narrow limits of range, so moose in America are often found within small areas, from which they never appear to move. This is very noticeable in the small numbers that frequent the eastern slopes of the Tetons in Jackman's Hole, Wyoming, and those of the Bitter Root Mountains and in East Kootenay. Yet in wider areas where moose frequent large forests of a similar character I have noticed a distinct small migration on the part of bull moose during the rutting season. In 1899 I found numbers of males were moving eastwards, from Ontario into Quebec, all as if actuated by some similar intention, and for a whole week I followed trails of travelling males, passing directly east towards the three rivers.

By making a fresh expedition I intercepted them and found that numbers had met the cows which they seemed to know would be met with there; at this place they evidently intended to "yard up" after the big snowfall in November.

In winter, moose in America are satisfied with a very small range, which is called "the yard," and may be anything from ten to fifty acres in area. Indeed they have been known to spend the winter in a space within a radius of 300 feet (E. Thompson Seton). The size of the yard seems to

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depend entirely on the quantity of the interior food supply, and having found a spot full of young birch, alder, willow, etc., they are content, and only move when driven forth by man, wolves, or by starvation.

That moose can live and even increase close to civilization, provided that the whole of their range is not attacked, is proved by the abundance of moose close to the large town of Winnipeg in Manitoba. Mr G. H. Measham, writing from Shoal Lake, and quoted by E. Thompson Seton, in his "Life Histories of Northern Animals" (p. 154), says:

"The moose is, however, far from being scarce or in much danger of becoming extinct. I can safely say that within fifty miles of Winnipeg there are hundreds of moose, and that within 100 miles there are thousands of them.

"For example, in the districts of St Lawrence and Oak Point there must be sixty or seventy hunters. Cutting them down to two moose per annum, that would mean 130 moose killed. Now it would be more nearly true to state the year's kill at 500 head of deer, mostly moose, and all killed in the municipality of Posen and the greater part in townships 21 and 22, ranges 5 and 6 west of 1st Meridian. This slaughter has gone on for years, yet the moose are still there, and lots of them. The fact is, that though there are districts (like Fisher River, Posen, Lake St Martin and so on) that are much hunted, yet there are vast districts that are practically untouched. The Indian hunter does not, nowadays, travel very far from his reserve, and I have reason to believe that the moose are not only holding their own, but increasing."

In very bad weather moose are often hard put to find a living in their yard, for although they may trample the first snow down by the repeated making of paths, subsequent falls often bury the best part of their food and force them to live on the loftier branches. Therefore they are often forced to leave a yard and seek for fresh ground in the depth of winter when the attacks of wolves are most to be feared. In most cases they will stay in the same yard until the melting of the snow in spring, when life again becomes easy to them.

Moose generally leave the yard sometime about the end of March, the bulls going off by themselves to grow their new antlers and frequenting swampy regions where there is an abundance of hardwood trees on which to browse. They live on the twigs and leaves of many deciduous trees, notably salix, moosewood, striped maple, rowan and birch. They also

THE MOOSE OR FLAT-HORNED ELK

eat quantities of grass and ferns which they reach by straddling the legs apart if it is short. They rise and feed at dawn and at irregular periods between sunrise and sunset, lying longer dosing and chewing the cud than other deer. They are very fond of various marsh plants, especially equisetum or joint-grass and various rushes, and no diet is more agreeable to them than the stalks, roots and leaves of the yellow pond lily. To obtain these they often plunge the head under water, drawing it out again suddenly as if fearful of surprise. I have stalked close up to a cow moose thus engaged and found that she bore a comical appearance with her face of strained surprise all covered with mud. When the short branches of trees are high and difficult to reach, moose have a habit of forcing a sapling down between their forelegs and then moving forwards until the tops are on a level with their heads, and so enjoy a good meal. This is known as "riding down" a tree, and where these deer are plentiful numerous bent and broken trees are always to be found.

I was never more struck by the expert woodcraft of the Indian than one day on a lake near Kippewà, when my Algonquin Indian, Angus, strolled casually past what looked to me a perfectly fresh spoor of a large bull moose.

I was naturally disappointed and could not help remarking, "Was not that a fresh track?"

"Oh yes, fresh track, boss, but eleven hours old," he replied.

I must know his reasons, so ventured to demand an explanation with the somewhat weak query of "How do you know?"

The old hunter gave a grunt of impatience as much as to suggest how it could be possible that any woodman should ask such a question. Turning back to the spoor he walked a short distance along it, looking not on the ground but up in the air. Presently his hand reached upwards and he nipped off the point of a salix shoot, cleanly bitten at the end by the vanished deer. On the end of this shoot was a gelatinous bulb of sap, now slightly hardened.

"See," he observed, touching the point which immediately became liquid, "sap come out of wood for ten hours and then get hard so—moose go by eleven hours ago—so—no good follow." It was a fine piece of observation that he had detected a broken twig as he had passed.

I think the finest piece of woodcraft I have seen performed was done by my Liard River Indian, Albert, one day in Cassiar, British Columbia. I had been at death's door for ten days with pleurisy and pneumonia

THE GUN AT HOME AND ABROAD

up in the high mountains to the north of Dease Lake as the result of catching influenza from a passenger on the Stickine River boat. I reached the valley more dead than alive and had difficulty even in sitting on my horse, my intention being to return if possible to civilization at once. We plodded along the sodden path in the blazing sunshine, the first we had seen for twelve days, and all nature was glorious in its autumn colours. I had a fit of the blues, for I had come 9,000 miles and shot nothing. Suddenly Albert, who was walking in front, stopped and gazed intently at something on the pathway. Albert was a moose hunter from his earliest youth and I knew that nothing would cause him to halt but sign of the great deer.

"A big bull—just gone by—you come," he jerked out. What could I do but say "yes," and followed him on tottering legs, for I was so weak that I could hardly stand. Fortunately the ground was flat and the bush not too dense, so we made good progress through the open forest. There were signs that the moose was feeding slowly in front of us, so we proceeded very cautiously. Silently as cats we crept on and our moccasins made no sound on the green moss. Suddenly Albert turned to me and said, "Now you, go ahead. Moose very near and just going to lie down." I crept forward and had not gone far when I saw a black spot at the back of some stunted birches. Moving to one side I saw what I took to be the shoulder of the moose. This movement on my part was detected by the animal at once, so that he sprang to his feet and stood for an instant gazing at me. In a moment a Mannlicher bullet was in his shoulder, and with two or three forward plunges he fell to rise no more. Our beast was a splendid bull in its prime, with a fine massive head of 60 inches.

"Now, Albert, I want to know," I said, "how you knew that moose was going to lie down?"

"Come," was all he said, and led me back on the spoor for about 100 yards, where we stopped in front of a large dwarf salix full of young green shoots.

"See that bush," remarked Albert, pointing to the small tree; "that extra good moose feed. If moose hungry he stay long time feeding. No—moose take one bite and drop it so (picking up the fallen twig), so moose full and now lie down."

It was a fine piece of reasoning and wonderful observation to have noticed the single fallen shoot. That is where the child of the woods beats us.

Where branches are high moose make quite a noise when feeding owing to the cracking of the branches. And in still weather I have heard them



ALASKAN MOOSE. The longest known example, 55 inches.

In the possession of Mr W. F. Sheard.

PLATE LXXXVIII.

THE MOOSE OR FLAT-HORNED ELK

feeding from quite a long distance. If undisturbed they frequent quite a small area all the summer, going in circles day after day over the same feeding grounds.

Late in May the female moose produces her calf or calves. Young cows generally bear one and adults two, whilst in rare cases three are born. "No one ever saw a cow moose followed by three sucklings or yearlings," says Mr J. G. Lockhart ("Proc." U.S. Nat. Mus., Vol. XIII, No. 827, p. 305); but this is not quite correct, for Mr Clifford Little, who has had such long experience in the Kenai Peninsula, tells me that he has seen a cow followed by three calves and that the cows in this part of Alaska invariably have two young ones. When very young, the calves will run and hide at once like the deer, and Mr Thompson Seton quotes the case of two calves which, on finding no cover, took to the water and submerged the whole of their bodies (p. 167). When surprised with young the mother nearly always utters a peculiar grunt or squeal when calling to her offspring, and I have heard the European elk do the same thing when separated from her calf.

The cow moose is followed by her calf until it is one year old, but then she generally drives it away when the new arrival is born. The calves by July and August begin to pick about for themselves and spend much time on their knees feeding on the ground. Adult cows also adopt this peculiar position.

Both bulls and cows become almost semi-aquatic in summer, and though their love for lake edges at this season is said to be due to the wish to escape the flies in the woods, I think it is as much due to the desire for change of food, for insects are even more numerous in such places than in the forests. The bulls often go about in pairs as caribou and our red deer do, and there are usually one old and one young bull, which leads one to suppose that like other species of deer they adopt the "fag" system.

The antlers of the male are complete in the first or second week in September, and I have seen a head quite clear on the second of this month. At first these ornaments are quite white but turn chestnut or brown in a few days as the juices dry and tree rubbing is over. The points always remain light yellow.

About the middle of September the rut sets in and the whole thoughts of the male are turned to love making. The actual date of the rut is very variable, for certain males will come to the call early in this month, and they have been killed by the artificial lure as late as the beginning of

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December. In fact, it is said that a highly expert "caller," of which there are perhaps half a dozen in Eastern Canada, can bring a bull up at almost any season, whilst the average hunter is lucky if he can produce an answer at any time.

The moose is very local in the summer, but in the rutting time the male begins to travel, although not as a rule to any great extent. The meeting places of the sexes are usually situated on the hardwood ridges above the swamps, but the fact that males come well at first to callers on the lake edges show that the answering cry of the female, if properly given, will lure them in any direction. At this season the bull, like other deer, hardly feeds at all when in quest of a charmer, but stands for hours in one place using his nose and ears, or wanders nosing about where females have passed. Sometimes he utters a low grunt or short bellow, afterwards thrashing the bushes with his palmated horns as if to warn possible rivals. The noise produced by this can be heard at a long distance and is often effective in inducing another male to accept the challenge. In fact, it is in itself so good a lure that the Yukon and Kenai Indians use no other method than beating the willows with the shoulder blade of a moose. The result is often to bring a noble trophy to bag.

The answer of the female to the bull is either a long, yearning, and somewhat cowlike cry or a deep grunt, something like that emitted by the bull but not so loud. Both sexes seem to approach each other with the utmost caution as a rule. They manœuvre to get the wind which, once obtained by the male, is recognized that all possible danger is over. He then rushes right up to her and a love-chase commences.

Mr Thompson Seton, in many of his interesting but imaginative works on North American game, does not give us true histories of northern mammals. He gives the public what they want, which are romantic stories of idealized and humanized creatures which have no real existence in fact, and which a large section of his admirers accept forthwith as true and sympathetic pictures of animal life. Personally I am not one of those who quarrel with him and call him a "nature-faker," because I admire all of his work and fancy his love of nature is very real and that he only wishes to interest the public by any means in his power. He is clever enough to know that if he followed the advice of John Burroughs and allowed "a straddle bug to remain a straddle bug," he would get the same limited hearing (combined with a certain degree of boredom) which the average reader grants to the true naturalist. He knows too well that his readers

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would number a few hundreds instead of many thousands, and like most authors he does not love obscurity. The primrose path of success is dear to him and he has achieved it by means of such charming works as "The Lives of the Hunted," "The Sandhill Stag," etc. On the other hand, Mr Seton can write *real* natural history when he likes and has given us one first-rate book, namely, "Life Histories of Northern Animals," which is so good in every way that it is not surprising that it is practically unknown in this country. His article on the moose is admirable, but I must entirely disagree with him in one statement (p. 175), to the effect that "All observers agree that the Scandinavian moose is monogamous, which is strong side-evidence, since the species is so closely related to our own. Finally, most of the hunters I have consulted, as well as Judge Caton, the leading authority on American deer, say, unhesitatingly, that the American moose is a strictly monogamous animal."

This, however, is not by any means the experience of those hunters who were best qualified to speak, and with whom I have discussed the subject. A beast cannot be said to be strictly monogamous that roams from one charmer to another during the course of a season, as nearly all Scandinavian hunters say they do. It is only monogamous whilst attached to one particular wife. Moreover, I have met one Lapp hunter and one moose hunter who had seen bull elk accompanied by two cows in the height of the rut. Again, Albert, the Liard Indian hunter, who accompanied me in Cassiar in 1908, said he has seen it several times, although it is unusual. Mr Thompson Seton himself states that "most of the hunters in Manitoba and on the Ottawa Mountains maintain that the bull roves from one cow's range to another, and will mate with many in the season, though he is rarely (?) seen with more than one cow at the time." This, I think, is a correct view. The bull moose or elk stays in most instances with one cow for a brief period, and either leaves her voluntarily or is driven away by the female, who does not permit his attentions for any lengthened period. It is likely that she does not long remain in season. We see that this must be the case by the fact that numbers of adult bulls are to be found roaming in search of wives during the height of the rut, and will come readily to the female cry when uttered by the skilful hunter. The reason why the females themselves come to this call is somewhat difficult to explain, and it is possible that she may even desire to share her position with another.

Both caribou and red deer, particularly the former, will frequently

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abandon their herds of females and dash away in search of fresh mates. I have seen a Scottish stag leave seventy hinds to go and fight and secure one or two hinds from another master stag, and he did not return to his first harem during that season, another stag taking his place. In deer nature, jealousy and the lust of battle are, I think, just as much a part of sexual desire as the wish to keep the prize already won, and in this respect moose seem to be no different from the other *Cervidæ*.

The bull-calf at this season is, as with other deer, tolerated by the adult male, but in the second season he takes his place with the "bei hirsch"—at a respectful distance—by reason of the fact that the advent of personal desires places him in the position of a rival. In September these young two- and three-year-old bulls wander about alone or keep in some safe place close to the clang of battle. Sometimes they spar with one another as if to test their powers, like boys at school, and I once surprised two young bulls that were having almost a serious battle.

In September the bull moose makes small hollows or soiling-pools—"elk-pits" they are called in Scandinavia—that is to say, he scoops out a depression in some muddy spot and plentifully sprinkles it with his own urine. These places have a very powerful odour, and when found the hunter must adopt the greatest care, for the deer seldom wander far from them at this season. In these pits the males roll and plaster themselves so that they, too, have a strong smell when killed. Both red deer and reindeer (in a small degree), make these "pits," but adopt a wider range from them at the rutting time. During the three weeks or so of the mating season the adult male does not eat, or if he does is supposed to chew only a few herbs that may or may not inflame his passions. By the middle or end of October, when the big fall of snow comes, the family party comes together again and unites in moving to some place, not far distant, where they may "yard-up." In old age both males and females seem disposed to wander about alone.

At certain seasons moose indulge in the same game of romps that roe, fallow and red deer do, chasing each other in play through the forest in a game of follow-my-leader. Even old males do this. I do not think that the eyesight of the moose is much better than that of the reindeer, and the animal does not seem to rely much upon it for safety. In the woods the nose and ears are constantly working. When there is no wind moose can hear the smallest crush of the foot at a long distance, and seem to differentiate at once the clumsy break of a twig by man from that broken



MOOSE FROM ALBERTA.

A fine specimen of the Eastern race. Span 64 inches.

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by some other wild animal. They usually walk down wind and lie down in places where the slightest airs are borne to them from various sides. They have a regular habit of circling before settling in their beds so as to get the wind of anyone following closely on their tracks.

On the whole moose are far better tempered than other deer. Even in the rutting season they are not nearly so dangerous as red deer, reindeer, or the smaller species when kept in confinement. Long ago they were regularly broken to harness in Norway and the Gulf of Bothnia, and recently many have been broken in and used to draw carriages and sledges in Manitoba. Tame moose are more or less successful pets in their own homes, but they have been found to be the most difficult of all deer to acclimatize in Zoological Gardens. In fact I have never yet seen a moose look well in confinement in Europe, and I believe they are unable to keep them for any time in New York or other American Zoos. Nowhere have I seen moose in a park look happy except in the National Park at Banff, Alberta, where the deer have a wide range covered with swamps and thickets, the former home of these animals in a wild state.

The moose has several enemies, of which the worst are man and wolves. Bears and cougars kill a certain number of calves, but can make no impression on adults. Deer-flies, ticks and mosquitoes also worry them, but these are small things compared with the vast army of young and old men who annually pour into the woods to hunt either for meat or horns. Yet in spite of all man's cleverness and destructive power the natural instincts of the moose are so highly developed that it more than holds its own, in spite of pump-guns used in and out of season. Not every one who goes to shoot a moose will get a single shot in the season, nor is it every hunter who cares or knows how to hunt off the beaten track. Then, too, there are vast regions of forest close to severely hunted tracts where man never enters and this "sanctuary" always affords a secure haven where moose may breed in peace and supply the place of those that are killed.

As the reindeer and caribou furnish all things to the Lapps, Esquimaux, and northern Indians, so the moose to-day supplies nearly all those things that are the necessities of life to the wood Indians inhabiting an area in North America of over 3,500,000 square miles. Its flesh furnishes a constant supply of meat and fat, so necessary as a resistance to cold. Its sinews are used for sewing, its horns and bones make tools of various kinds, and its skin provides clothing, moccasins and snow-shoes. Even its hair is used for embroidery and ornaments.

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The moose is an animal gifted in the highest sense with wariness and speed. Its powers of hearing and smelling are perhaps as great as those of any woodland mammal, and in the great silent forests in which it dwells there is no beast so difficult to approach. It is only when it comes out into the open, where man can see it first, that it is at all at a disadvantage; and in consequence the hunting of moose in Alaska and Northern British Columbia is somewhat easier than in the forests of Eastern Canada, where there are no ranges of mountains with large open or semi-open spaces. In the former regions moose may often be spied from a long distance and directly stalked as elk are in some parts of Norway; but in the east the chances of finding a good bull on an open plateau or lake edge is distinctly rare.

There are three methods of hunting the moose employed in North America, namely, by still-hunting on the hardwood ridges or following its track in the mountains of the North-West with the help of an Indian; calling by means of the birch-bark horn; and "crusting," i.e., following the track of the moose in deep snow and running it down on snow-shoes. Of these three methods the first is by far the best, although the most arduous. In fact it is the only sportsmanlike method of killing this grand animal. The long legs of moose enable them to travel with ease over deep snow, miry swamps, and fallen timber, so that a man must be sound in wind and limb to follow them in their tortuous and extensive wanderings. They walk fast, and when not resting or sleeping are constantly on the move, so that the hunter must be prepared for severe toil before he has a chance of seeing a warrantable bull. Nothing is more delightful on those crisp autumn days than to follow the trail of a travelling moose. To a man who loves nature in all her silent moods, and likes to study the wonderful skill of the child of the forest who accompanies him, there is no finer sport, nor one that appeals more to the character of the true hunter, than outwitting the giant deer. True, the climbing and the work of hunting is neither quite so arduous nor fraught with so many side issues as the chase of the mountain sheep, but it has certain qualities of its own that are both undefinable and exquisite. It is, in fact, better to hunt moose and to fail than to succeed with some meaner quarry.

No white man, however skilled, is quite the equal of the Red Indian. He is in his element noticing the language of the forest, and if he is inclined to be communicative, which is rare, explaining it to you. A good white hunter can follow a moose track on damp or leafy ground, but only an

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Indian has the amazing skill which allows him to look, not on the ground, but *straight to the front* and follow at a full walk the apparently invisible tracks of a bull that has walked over rock or sand soil. I have twice enjoyed the company of such born hunters, and they were each in their own way fully as sensitive and as observant as an elk-hound, and no higher praise can be said than that. The majority of the so-called moose-tracking Indians are little better than white men, and when we have the authority of George Crawford, a half-breed of Mattawa, and himself, perhaps, the finest moose-hunter in Eastern Canada, that there are only six first-class hunters in Quebec and Ontario, it shows that the experts in this as in all other trades are very rare. Poor Angus, of Mattawa, a pure-bred Algonquin Indian, with whom I hunted in Ontario in 1902, was the best man I have ever seen in the woods. His observation and knowledge of forest life amounted to genius, and he embodied the character of the Indian of the story-book better than any other man, black, white or red, with whom I have hunted. Nothing escaped his hawk-like eyes, and nothing diverted him from a track but nightfall. Strange to say, although we followed many bulls, I never obtained a single shot during a month, and had at last to subsist on musk rats, no pleasant diet. One week when the bulls were travelling we found a fresh spoor every morning and hung on to it till nightfall without once seeing our game.

One instance only I will give of his forest knowledge. We were paddling slowly down a lake one frosty morning when Angus suddenly lifted his paddle and said:

“Do you want to catch a mink, boss?”

“Of course,” I replied, thinking the middle of a Canadian lake a queer place for mink trapping.

“See that tree fallen into the lake and looking all shiny?” He pointed to a fallen tree lying in the water some 200 yards ahead.

“Yes, I see the tree with the wet bark glistening,” I said.

“No, no!” he jerked, “No wet—shiny—shiny.”

I said nothing, five years with Indians had taught me that it is very bad policy even to contradict a Redman.

We moved up to the object and of course Angus was right. The surface of the trunk was not wet, but, stripped of its bark, was smooth and dry.

“How?” I remarked.

“Mink coming here to fish every evening and running very fast up and down to catch trout, he polish it with his belly fur,” was his reply.

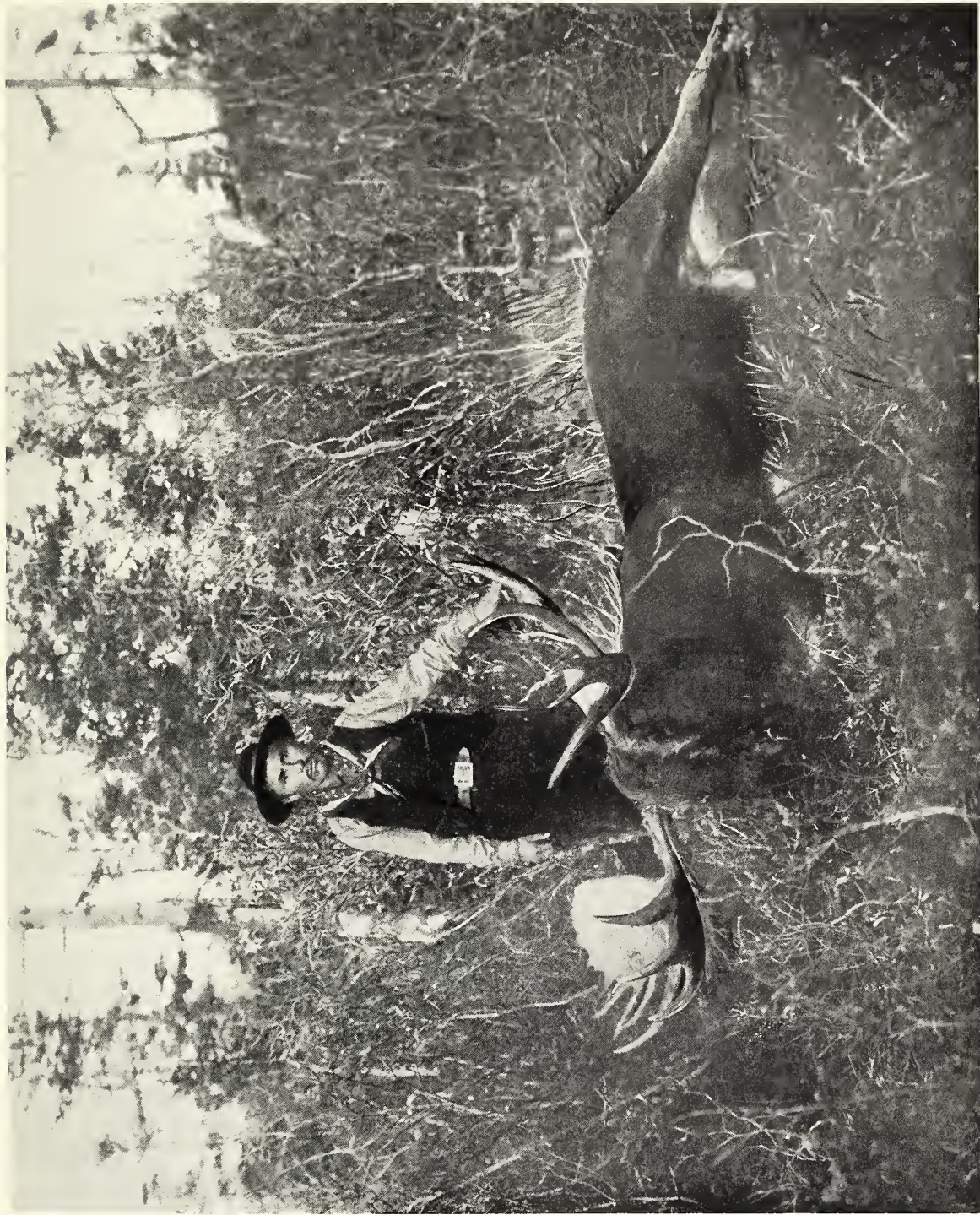
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He placed a small gin in position and next morning had a lovely mink in the trap and the following morning yet another. To see the difference between a *polished* and a *wet* log of wood at 200 yards is reserved for the eyes of the Indian.

Poor Angus! he burst a bloodvessel out with me one day and I had an awful night with him in the woods, as I thought he would die every minute; but at four in the morning I got him to camp and the canoe and paddled him down to Smith Lake and so to the river and Mattawa, where he died a fortnight later.

Later I went hunting moose with a drunken ruffian who knew little more of moose-tracking than I did, and yet we killed two good bulls the third day out. Such is luck or whatever the reader may choose to call it.

In tracking moose over hard ground the best hunters fail nine times out of ten. There are so many contingencies that may all militate against the hunter. Once started it is seldom possible to overtake travelling moose. They walk or trot one behind the other, stepping into the same tracks with such accuracy that it seems only one animal has passed. They step over three-foot logs with ease. Their usual pace is a long trot and they never gallop except for a few yards on first being frightened, and run through the thickest timber without making a sound. Often you think the bull must be in a certain patch of timber when in reality he is miles away, for he has circled unseen to your flank or rear, got the wind and silently vanished. When suddenly surprised face to face the moose bounds away and smashes everything in its road to get out of sight, then deeming concealment futile. In the open it gives one sharp glance, wheels round, and trots away with head held high in the air. It runs to the last point where a view of its enemy is possible, wheels round and with another swift glance, disappears with a certain pride of aspect. A volume would be required to discuss all the phases of moose-hunting, and there is no sport in which the hunter must exercise more skill and care both in camp and out of it to be successful. It is a good thing to have an eye for country and to note the places that are most likely to hold moose, and work up to them carefully against the wind. In the North-West it is a good plan, as I have found in caribou hunting, to frequently climb a tree and survey the country in all directions. Often a moose may be lying or feeding close at hand. When following a moose track never be discouraged if the animal suddenly starts to run. It has not necessarily got your wind but may only be making a little rush before lying down. This is a common habit of the animal.



INDIAN TRACKER AND MOOSE.

Shot by Mr P. N. Graham.

PLATE XC.

THE MOOSE OR FLAT-HORNED ELK

One of the commonest sights in autumn at the Canadian railway stations is the figure of a portly old gentleman standing with an air of pride beside a fine moose head. We do not envy him his good fortune but we wonder how many moose that sleek and over-fed town dweller would kill if left to his own devices. The fact is a *real* hunter has lured those noble horns within easy shot on some lake edge at eve and our adipose friend has done nothing but raise his rifle and bring off an easy shot that any boy of ten could accomplish.

Killing the bull moose after it has been lured within shot by means of the cry of the female, skilfully imitated on the birch-bark horn, is an interesting thing to see once, but it is scarcely "playing the game." Perhaps ninety per cent of the moose killed by sportsmen in Eastern Canada and Maine are shot by this method, and though it affords both exciting moments and shows something of the habits of the bull during the rut, it is not a method of the chase that should be regularly followed by young men of mettle. As a means of killing the bull it is unusually deadly.

Moose calling is effective for two or three weeks, usually from September 6 to about October 10, according to the locality and skill on the part of the caller. A dead calm is essential as a moose cannot hear the sound if there is any wind. The cry can be heard for four or five miles and it sometimes takes the bull a long time to approach.

The experienced caller begins very low as the bull may be close at hand, and he calls every ten or twenty minutes according to local fancy. The answer is generally a long deep grunt followed by the breaking of branches, and on its way to the supposed female the male often stops and thrashes the bush with its horns as if to warn rivals. After much suspense, it is a moment of thrill when at last the great black monster comes into view, looking even bigger than he really is in the evening glow.

There are great variations both in rise and cadence of the female cries which the caller emits, and the most skilful know exactly when to increase and modulate the succession of squeals, whines and groans that evidence the supposititious desires of the amorous female. Even the best callers are not always successful. The wind may rise, the bull may detect a false note, or a real cow may utter some note of superior attraction in another direction. A very skilled caller can bring up a bull right at the end of the rut, when other imitators have long since put away their horns. Mr W. Butler, who had spent seven seasons calling moose in New Brunswick, told me that on one occasion no fewer than six bulls came to the call at the same

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time and he shot the wrong one. One with a head well over sixty inches was looking at him from behind, and was only seen as it dashed away after the shot. The usual call of the cow is something like "Moo—waugh—yuh," but she has many other cries which are difficult to render onomatopœically. The bull answers "Oh-ah—oh-ah," sometimes repeated three times.

Whether the moose of the North-West are stupider or more blinded by passion, the fact remains that many sportsmen have shot bull moose there at their first attempt at calling. It is said that almost any grunting noise will call them up, though the Indians prefer to attract them by thrashing on the bushes with a moose shoulder blade.

A Norwegian told me that he supplied Dawson one winter with moose which he killed with his elk-hound, adopting the same method as he did in Norway. He killed many with his "bind-hund" until the dog and his companion were both murdered by a band of ruffians. His tale was a pitiful one and too long for insertion here. No doubt moose could be easily killed both with the "los-" and "bind-hund" in America as the old bulls come readily to bay. I know that several were killed a few years ago by the former method on the Macmillan.

The method of running the moose down when the snow is just hard enough to bear man, whilst the great deer breaks through, and known as "crusting," is now seldom practised in Canada and should be condemned by every sportsman. Unfortunately it is still made use of in certain districts of the east where game wardens are few or inefficient. That there is to-day a great deal of moose poaching in Canada is, unhappily, too true. Often the railway camps along the new lines are supplied with moose flesh the whole season; not a word being said by those whose business it is to protect the game. In Canada and the States there has always been one law for the resident and another for the visiting sportsman.

Only a few years ago a man I met boasted that he killed ten moose in January and February and openly sold the flesh in the streets of Mattawa, where three game wardens were then living. Nothing was done or even said to him, for he was a powerful citizen—politically.

THE CARIBOU

THE caribou or reindeer is on the whole the most abundant species of deer found on the continent of North America and adjacent islands. I have made a comprehensive study of this animal and have a large collection of the horns and skulls of the caribou from nearly all local races, and I have hunted them in various districts for some seasons; the conclusion I have reached is that there is no basis whatever of reason for dividing the so-called *woodland* and *barren-land* races. The cause of this naming was originally due simply to a misunderstanding of the ranges and habits of these animals, which are, in varying degree, quite similar in character. All the European, Asiatic and American races migrate periodically both from barrens and woodlands to other barrens and woodlands as the contingencies of climate and food supply dictate. Ninety-five per cent of the migrations are due to the necessity of seeking a new feeding ground and not to the rigours of winter; for these deer can withstand lower temperatures than any other species, as witness the existence of Peary's reindeer and those on the islands of the Arctic Ocean north of the Lena, which are probably the coldest places in the world with the exception of the Ver-skoyansk Mountains and Northern Alaska. Here these animals live in perpetual snow and frost and yet are able to support life by digging for the moss with their feet. They have, too, the knowledge that migration, though possible over the ice, is not a matter of necessity.

Another point in this argument is that the so-called woodland races frequent and cross barrens in their periodical migrations, whilst the "barren ground" races, according to all the latest and best authorities, spend just as much time in the timber as in the open tundras.

The more we study these interesting animals and learn their ranges and erratic migrations the more do we find that all, or nearly all, overlap and interbreed. I have found that the *Tarandus rangifer caribou* of the Central Canadian forests merge into their finest type and become almost a distinct sub-species in Central Labrador (from Cartwright to Hamilton Inlet), where the animal grows as large and develops as fine horns as those of *Tarandus rangifer osborni* of Cassiar and the Yukon; but very few heads of these north-eastern deer are in museums or private collections. Further north these caribou deteriorate again, and wander to the edge of the barrens, where they overlap and interbreed with the (so-called)

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barren-land race of North, Central and Eastern Labrador, *Tarandus rangifer labradorensis*. Again, these assume their finest form between Cape Chidley and Ungava. These are the finest horned of all races and are said to be nearly extinct. To the south and west of Hudson Bay smaller members of this race meet the migration of the true "barren-land race," *Tarandus rangifer arcticus* (Richardson) which ranges south of Great Bear Lake and west of the Mackenzie to North-Eastern Alaska. The caribou of the Mackenzie River are slightly different from those of Alaska, north of the Tanana River, and the small race in the islands in the extreme west of Alaska. The caribou of the Ogilvy Mountains north of Dawson are also a distinct sub-species and like those of the Alaskan peninsula, *Tarandus rangifer stonei*, are an intermediate race between *Tarandus rangifer osborni* and *Tarandus rangifer arcticus*, having the characteristics of both races. The caribou of Central Keewatin are closely allied to *Tarandus rangifer caribou*, but are smaller and more spreading in their horns, being also a buffer race between north and south. In dealing with the races of reindeer west of the Rockies, that is, within Northern British Columbia, Idaho and north to the mouth of the Yukon, there seems to be no real sub-specific distinction between any of these. The caribou of Idaho, Kootenay, Fort George and Southern British Columbia are *Tarandus rangifer montanus* (Thompson Seton), but they suddenly become a giant race in Chilcotin, where specimens are identical with *Tarandus rangifer osborni* of Northern British Columbia, the Yukon and the plateaux of its adjacent branches. Nearly all these western forms are black bellied and very dark grey on the neck. In fact, as Mr Madison Grant points out, there is a distinct gradation between Osborn's caribou in Alaska and the Arctic races, the intermediate forms being *Tarandus rangifer stonei*, *Tarandus rangifer granti* and, I think, *Tarandus rangifer ogilvyensis*.

If we are to recognize the various North American sub-specific races, I think they should be as follows:

NORTH AMERICAN REINDEER

Tarandus rangifer caribou (Gmelin). Description: Light or dark brown above; a dark line across the flank (but in no sense a black flank stripe as in European and some American races), with a light line immediately above; neck generally white; lower neck hair, white; legs, blackish with a broad band of white above the hoof; muzzle and head, black, except white



L. $45\frac{1}{2}$
 Circ. above base. $5\frac{1}{4}$
 Depth of brow. 13.
 Indent inside. $3\frac{1}{2}$
 no of points. 53.

East Canadian Caribou
T. R. Caribou
 The large northern form.

Cartwright, Labrador.
 Presented by Capt. J. M. Cartwright to
 Williams, 2nd East of Dartmouth about
 the year 1790.

From a Drawing]

[by J. G. Millais.

THE LARGE NORTHERN FORM OF EAST CANADIAN CARIBOU.

PLATE XCI.

THE CARIBOU

muzzle and lower cheeks which are pale brown; anal portion, white; underparts grey or whitish; round the testes, white; the horns are exceedingly variable and seldom exceed 40 inches in length, though those of Southern Labrador reach 52 inches. The brows are very rarely doubly palmated, but there are a few examples known. There is usually a hooked point on one side and a very large palmation on the other side, with many points, notably in specimens from Nova Scotia, New Brunswick and Southern Labrador. The "bays" are not as a rule large and the tops are much broken up and generally heavier than in Newfoundland specimens.

Perhaps the finest specimen of this race is one picked up by the pioneer Cartwright near the village in Labrador which bears his name, early in the nineteenth century. He stated that it bears seventy points, and this, I think, is correct, for after much trouble I have recently traced it and had it photographed. It is a marvellous specimen and has enormous brows, double bays, and very large tops. Sixty-eight points are to be seen in the photo and others are hidden. Two other grand specimens given by Captain Cartwright to William, 2nd Earl of Dartmouth, are also exceptional. One of these bears fifty-three points and is $45\frac{1}{2}$ inches long, while the other has a very large brow with a depth of 21 inches. Another wonderful head with an extraordinary number of small points (said to be sixty-six) is in the possession of Colonel Ranken, of Mattawa. It was killed many years ago in the open country about Abatibi, North Ontario.

There is a fine specimen with a very large brow in the British Museum from Nova Scotia. These eastern caribou seem to be migrating north. They have left the State of Maine and are said to be also leaving New Brunswick. In Nova Scotia a few are still left on the mainland, but they are not increasing west of the Strait of Canso, notwithstanding a long close season. They are still fairly numerous in Cape Breton.

How far west the true *Tarandus rangifer caribou* goes it is at present impossible to say, but from an examination of a large number of heads in Winnipeg there seems to be a distinct change between the deer of Western Ontario and Manitoba, the latter being smaller and the type of antlers similar in most respects to the Keewatin variety.

Tarandus rangifer keewatinensis (sub-spec. nov.). Similar in description to the last named but distinctly smaller. The antlers of those from the south-west and in the forest region north of Prince Albert, Saskatchewan, more closely resemble those of *Tarandus rangifer montanus*, being very short, not more than 30 inches, and broken up somewhat like the horns

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of the mule deer. Further north in Saskatchewan (doubtless owing to better feeding) the horns are longer, up to 36 and 40 inches, and are exactly the reverse of *Tarandus rangifer caribou*, for the brows and bays are poor and the tops often very large and with long points, many of which are bifurcated. I give examples of heads which are typical from Central Keewatin, where horns are usually short but generally palmated or furnished with many points on the tops; and from North and South Saskatchewan. Formerly this race migrated regularly south to the Lake of the Woods (Manitoba), crossing the Canadian Pacific Railway line close to Kenora, but of recent years they have ceased to do so. The Ontario caribou used formerly to come as far south as Lake Superior, but this winter migration has also ceased.

Range. Central and Northern Manitoba, Keewatin North and Saskatchewan and as far north as the Peace River and Lake Athabasca, where numbers winter. In summer they are found in some numbers north of Great Bear Lake, as Mr Melvill informs me. On Cree Lake, Keewatin, there are many of these caribou which are stationary at all seasons, which are known as the "home deer," and in early winter these are visited by many moving south which are known as "travelling deer."

In their northern range these deer meet the true *Tarandus rangifer arcticus* in the neighbourhood of Bear Lake, which seems to be the southern point to which the latter migrate in winter, and it is more than likely that the two races interbreed, as my friend Mr Melvill, who has spent three winters there, informs me he has shot specimens which seem to fulfil the characteristics of both races.

Tarandus rangifer terra-novæ (Bangs). Slightly smaller in size and paler in colour. The caribou of Newfoundland are a closely-allied offshoot of *Tarandus rangifer caribou* of the mainland. Description: The upper parts are of a lighter brown than the caribou of the mainland, the dark lateral stripe faint or altogether absent, with the usual whitish line above. Hinder-parts and neck, white and very rarely grey on the neck. Other parts as in *Tarandus rangifer caribou*. The horns are usually more even in their distribution of growth than other races, that is to say in the most perfect specimens the brows, bays and tops are all well palmated and furnished with a number of points. The main weakness of Newfoundland horns is usually the tops, which are generally poor and unfinished. Double palmated brows are more common in Newfoundland specimens than in any other race, and, having seen thousands of pairs of antlers, I should say that one

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head in every hundred has good double brows. This, however, often means that the bays or tops may be poor, so that a head that is complete in all parts is extremely rare, and I have only seen three that answer this description, namely, a pair of small horns measuring 36 inches, picked up by Mr H. Prichard on the Gander, carrying forty-nine points; a head (shot by myself in the same place) with forty-nine points; and one in the possession of Mr H. Reid with forty-seven points, killed in the north of the island.

The most remarkable head ever killed in Newfoundland, now owned by Mr Job, was shot by an Indian a few years ago. It bears fifty-six points, but the tops are small. A very fine fifty pointer, with grand brows and bays, was killed in 1909 and is owned by Mr H. M. Breck. A forty-seven pointer with enormous bays was killed at the Bungalow near Grand Lake in 1906, and the same year I killed a forty-four pointer almost exactly like it (with twenty-two points on the bays only) near Mount Sylvester. All these last named had very poor tops.

The usual Newfoundland male caribou has from eighteen to thirty points and far the greater number never have more than twenty-five points.

Mr Madison Grant very properly does not accept the two-race theory in Newfoundland which some of the natives speak of. Certain groups of deer inhabiting different areas, where food is abundant at all seasons, do not migrate at all, whilst numbers of migrating deer pass through their midst. There is no such thing as races of "small" and "large" caribou in the island, such animals being merely variations of individuals. The largest Newfoundland caribou out of forty-five specimens shot by myself measured $46\frac{1}{2}$ inches at the withers and was 90 inches from the nose to the root of the tail. It was an exceptional animal, and had, like all big individual deer, very poor horns.

Tarandus rangifer labradorensis (sub-spec. nov.). Considerably larger than the true (so-called) barren-land caribou of Richardson, the race inhabiting the northern peninsula of Labrador differs from them in many particulars. They are more bulky and darker on the upper parts, whilst the horns are quite distinct. The average of horns brought into Nain, Davis Inlet and Fort Chimo range between 55 and 60 inches in length, and have a very well marked bend forwards in their lateral half. The chief distinction, however, is the length of the shafts which support the brows and bays, which are very long. The palmated brow is usually very wide and furnished with very small points on its lower outer edge and very long

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ones on the upper edge. These often stand up high and curl backwards. The points, too, on the bays are long and often curl inwards. The horns of these deer are more spreading and graceful than other local races, whilst the skulls are longer and far larger than *Tarandus rangifer arcticus*. They are, in fact, more distinct from *Tarandus rangifer arcticus* than the Newfoundland caribou are from those of the mainland.

Range. William Wallace, Sir Robert Harvey and other travellers found the *T. r. caribou* all the way up through Labrador as far north as Lake Mickikamau, where it is replaced by the sub-species which performs its migrations in an easterly and westerly direction. It is found in large numbers through the province of Ungava, having a southerly limit in Mickikamau and Seal Lake (Mr S. Hubbard), an easterly limit by the sea at Davis Inlet, where Mr Cabot found them in large numbers in August. In the west it ranges to James Bay, and Mr S. Hubbard saw the last five degrees south of Ungava port. Their migrations to the east coast at Nain are fitful and irregular, though they come to the George River with some regularity, this being the great slaughter place of the Nascopie Indians. Until recently they ranged north close to Cape Chidley but have now been almost exterminated there by the Esquimaux from the coast.

There seems little doubt that *T. r. labradorensis* attains, or did attain, its greatest size in this north-east corner of Labrador, south of Cape Chidley, for until recently the longest, and in many respects the largest, caribou heads in the world have come from this area. Most of the heads have been brought to England by the captains of the Hudson Bay schooners on their return from Hudson Bay, and are in British private collections. There is a fine specimen in the Dunrobin Museum of 61 inches; another of 60 inches in Lochinch House, Wigtown, N.B., the property of the Earl of Stair; a third in Poltalloch House, Argyllshire, and a fourth in the British Museum, presented by Sir Robert Harvey. The finest specimen was killed in this district by an Esquimaux about the year 1879, and brought by a Hudson Bay captain to London, where it was given to the late Mr Bartlett, superintendent of the Zoological Gardens. At his death it was purchased by the late Lord Powerscourt, and recently it has passed into my collection. This is by far the largest head of a caribou in existence. The horns measure $67\frac{1}{2}$ inches in length and are, moreover, of great thickness. They carry thirty-eight points and the tops and large brows are palmated to an extraordinary degree.

The skull of this great deer is as large as was that of Osborn's caribou,



LABRADOR CARIBOU.

Length on front curve 62 inches: Circumference $5\frac{1}{2}$ inches: Tip to tip 40 inches:
Widest inside $50\frac{1}{2}$ inches: Points 21 + 17. Locality: Hudson's Bay.

In the possession of Sir Edmund G. Loder, Bart.

PLATE XCII.



Photo by]

[Hy. Dixon & Son.

LABRADOR CARIBOU.

The largest and heaviest known example of Caribou.

Length of right horn $67\frac{1}{4}$ inches: Points 39.

Killed near N.E. coast of America about 1879 by an Esquimo.

In the possession of Mr J. G. Millais.

THE CARIBOU

while the nasal apertures are longer but not so wide. This giant deer bears the same relation to *T. r. labradorensis* that *T. r. osborni* does to *T. r. montanus* and might again be considered a branch race if others hold good, but at present I have no complete particulars of its range or body characters. My friend, the late Dr Hantsch, who spent a summer on the Chidley Peninsula, thought that this giant caribou was extinct, and although he saw several old skulls recently killed, he could not obtain any information from the Esquimaux of what had become of the main herd, or whether it was subject to periodical migrations as performed by those further to the south at Nain. He considered it to be a good sub-species and obtained one head there (of which I possess a photo) of which only the frontlet remained, but there is sufficient bone left to see that it belonged to this giant race. The example in question has double palmated brows, the only one I have seen from this district. In the Vienna Museum there is a magnificent specimen which I should attribute to this race, and Sir Edmund Loder has an example of 63 inches in length with the same skull and character of horns which probably owned North-Eastern Labrador as its home, though no particulars are known.

Tarandus rangifer arcticus. This is the smallest as well as the most numerous of the North American reindeer. In size the typical form scarcely exceeds the Scandinavian reindeer and is very similar to it both in the colour of the body and the horn growth. A typical specimen, shot by Mr C. D. Melvill at Deans River, Great Bear Lake, in September, 1910, could easily be mistaken for a European reindeer, though slightly larger. There is a very well-marked and broad black flank stripe with a white line above it. The lower chest is black and belly as far as the penis brownish grey, with the area round and above the testes white. Neck and long throat hair, a small space between the horns, muzzle and chin, white. Horns similar to Saetersdal reindeer, being long, thin and without the forward hoop of the Labrador race. The largest specimen shot by Mr Melvill is $57\frac{1}{4}$ inches with twenty-four points, but this race does not as a rule carry fine horns with many points.

The Arctic caribou of North Canada and Alaska ranges from the west sides of Hudson Bay at Fort Churchill, through Northern Keewatin, and in winter passes south to the north shore of Lake Athabasca and west to the Rockies above Fort Vermilion. It keeps on the eastern side of the main range of the Rockies and remains east and at some distance from Lake Finlayson and the Yukon, making its migration in a north-westerly

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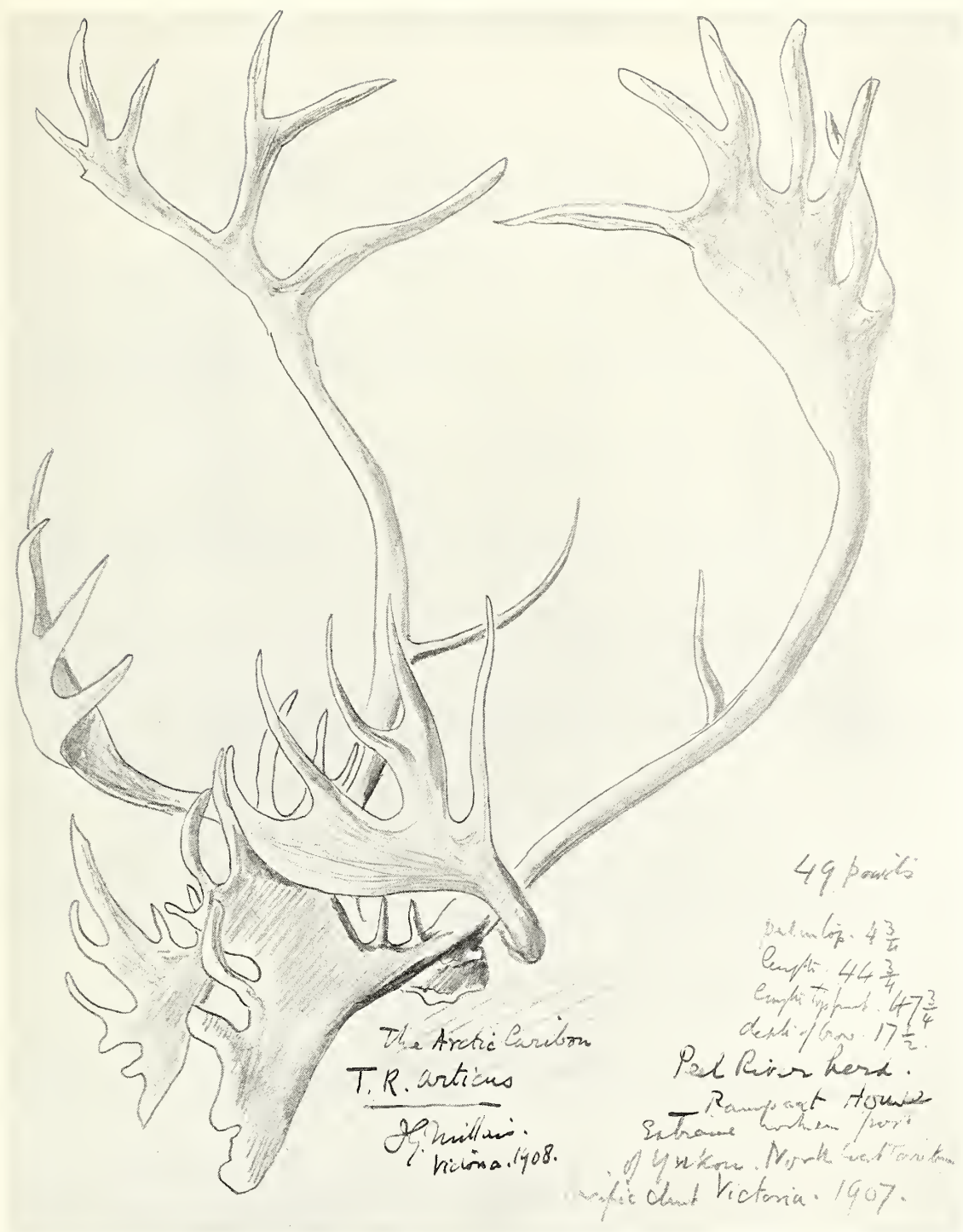
and south-easterly direction round the north side of the Yukon. On the western side of Alaska it comes down almost as far as the north side of Mount McKinley and the Kuskokwin River. The caribou of the extreme west of the Alaskan Peninsula is *T. r. granti*, which is practically identical with, but slightly larger than, *T. r. arcticus*.

As we should expect in animals occupying so large an area there are distinct varietal differences to be observed amongst the local herds, for within the space from Fort Churchill on Hudson Bay to Nome in Alaska there are again many local sub-races within the sub-species. All intelligent observers who have travelled in these northlands have observed that each body of reindeer has its more or less defined range of north and south migration and that these herds do not migrate at haphazard across the whole area. Most of the herds migrate due north and south, but there are exceptions. For instance, in 1911, an Indian hunting near Fort Simpson on the Mackenzie killed a bull arctic caribou in whose side was embedded a copper arrow head only used by the Esquimaux of Coronation Gulf (Arctic coast south of Victoria Land). This shows that this animal performed a western migration in the previous autumn and all Mr Stefannsen's observations tend to show that the caribou of Victoria Land and the coast line immediately south of it move either south, east or west in the autumn.

It would seem that the best horned local race of these caribou are those inhabiting the country in the neighbourhood of the Porcupine River, west of the Mackenzie. These perform a south-westerly migration in autumn and are found in October in large numbers in the neighbourhood of Rampart House, the extreme northerly post of the Yukon.

These may possibly be the caribou which Mr Madison Grant speaks of as "a new species," for their horns are quite distinct from the caribou of Athabasca and east of the Mackenzie. I examined six heads, brought from there in 1908, in Victoria, and give a figure of the best, a beautiful head of forty-nine points. All the skulls of these deer were small, with the horns finely palmated and furnished with a large number of points, and in many ways similar to the old "Hardanger" reindeer of Europe. Mr Grant also states ("The Caribou," p. 14) that there is a "red caribou, extremely rare, if not already exterminated," north of the Porcupine River. It is possible that this may be the same as the foregoing.

At present we do not know enough of all these local races of the Arctic caribou to define their limits and migrations; for the areas in which they



[From a Drawing]

[by J. G. Millais.]

ARCTIC CARIBOU.

PLATE XCIII.

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dwelling are so vast and so difficult to traverse that the experiences of individual travellers are not sufficient to give us a comprehensive view of the whole question, and it will take years before we are in a position to know the limits of range of each local variety. The great difficulty of determining these local races lies in the fact that whilst large numbers remain in one area practically *the whole season* equal numbers migrate and pass through them to other areas overlapping other local races. Formerly it was thought that all these northern caribou migrated but this is not the case. For instance, great numbers of caribou never leave the neighbourhood of the Arctic Ocean east of Point Barrow and the best hunting season of the Esquimaux there is in January and February. So, too, east of the Mackenzie, Mr Stefannsen found a few caribou *at all seasons* in his long journey from this river to the Chesterfield Peninsula, and from this we know that large numbers always migrate in a south-westerly direction. This shows that the Arctic caribou is in no sense different in its habits from the caribou of Newfoundland or the central Canadian forests.

That all these northern reindeer overlap and interbreed there can be little doubt, which makes the making of further sub-species more difficult.

As my friend, Mr Warburton Pike, says, in a letter to me: "The whole subject of the variations of these northern caribou is so enormous that I have never dared to attack it." Speaking of the junction of races he says: "When I was shooting in the Great Slave Lake country many years ago, all the caribou to the eastward were the 'barren ground' race, but when you crossed the river to the west you entered a heavily afforested region inhabited by the 'woodland' race as they are called locally. Those in a sparsely wooded country were an intermediate type, and thus caribou affect a type in direct ratio to the character of their surroundings."

Tarandus rangifer ogilvyensis (sub-spec. nov.). If the intermediate races, so-called "barren-land" and "woodland," such as *T. r. granti* and *T. r. stonei*, are to hold good as sub-species we must acknowledge yet another "buffer" race found in the Ogilvy Mountains, to the north of Dawson. These caribou are also hybrids of *T. r. osborni* and *T. r. arcticus*, and both, in body markings and horns, show their affinity to both their local races. Specimens shot in these mountains by Mr Sheldon, Carl Rungius, F. C. Selous and other travellers show the type to be a large animal, not quite so big as *T. r. osborni*, not so dark in the colour but bearing also a strong general resemblance to *T. r. arcticus*, but larger than that animal. The horns bear a close affinity to inferior specimens of *T. r. osborni*, being thick

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and well furnished with points, but without the heavy and palmated tops with long points so generally found in that race. They have not however the same angle of the beam as *T. r. arcticus*, being rather straight and somewhat upright as in *T. r. osborni*. Mr Osgood, who was hunting with Mr Charles Sheldon when he killed his specimens on the Ogilvy Mountains, just north of Dawson, Alaska, in July, 1904, definitely identified* the animals that were killed as true *T. r. arcticus*, but I do not know on what grounds he based his conclusions. Neither the upright horns nor the body markings are like those of members of that race, but rather bear a closer resemblance to a small race of *T. r. osborni*, whilst they were found high on the rolling tops of mountains in a habitat usually affected by this local race. I figure two specimens of heads from the Ogilvy Mountains which were brought in to Victoria in 1907.

If a great series of specimens could be obtained from various parts of Alaska I believe that this buffer race of *T. r. ogilvyensis* would be found to blend gradually on the south and south-east with *T. r. osborni* and so merge into a big black caribou, and on the north and north-east into the smaller and paler true *T. r. arcticus* of the Porcupine and Peel Rivers.

Taking the Ogilvy Mountains as a centre we should get every intermediate type of large and dark caribou, with more or less palmated or straggling tops, as we travelled south, and small and paler caribou with more spindly and hooped horns as we advanced north or north-eastwards. The position of *T. r. ogilvyensis* is, therefore, exactly similar to that of *O. m. fannini* amongst the mountain sheep and if one holds good the other must be accepted.

It is now well known that the caribou of Alaska are roughly split into two great sections, namely the northern or "Peel River" herd (*T. r. arcticus*) which regularly migrates from north-east to south-west or north to south in the fall, and the "Southern herd" (*T. r. osborni*) which are only partially migratory or stationary in all the high plateaux of most of the mountains found at the sides or watershed of the main Yukon (south of Dawson) and its confluent.

In the fall enormous bands, variously estimated at between fifteen and twenty thousand, migrate south from the Peel River watershed and cross the Ogilvy Mountains close to Dawson, about November or early December. This "Peel River herd" picks up the Ogilvy Mountain caribou on its way and passes through them and moves north or eastwards as far as

* See *The Wilderness of the Upper Yukon*, by Charles Sheldon, p. 40.



T.R. Ogilvieensis.

J. G. Millar, Victoria B.C. 1908.

[From a Drawing]

[by J. G. Millar.

OGILVIE MOUNTAIN CARIBOU.

PLATE XCIV.

THE CARIBOU

the Tanana River. On the east side of the Rockies these caribou range well down to Mackenzie, it is supposed as far as the head of the Pelly River.

Speaking of the autumnal movements of *T. r. arcticus*, probably mixed with *T. r. ogilvyensis* and *T. r. osborni*, Mr Jack Lee, a professional caribou hunter says ("Outdoor Life," Nov., 1909, pp. 475-7):

"The caribou of this northland are most nomadic in their habits. A herd is seldom found in any one scope of country two seasons in succession. A herd as understood here comprises all the animals (caribou) ranging on any one of the great mountain ranges that separate great watersheds. Each fall the thousands of bands, comprising the herd, will bunch into a great mass and move, maybe several hundred miles, to another part of their particular range, and when extended will thickly occupy a scope of country twenty thousand square miles in area. (I can send the names of scores of men, in here, that will verify all I say.) Extracts from two accounts (published in the 'Dawson News' last fall, 1908) by eye witnesses, of a herd crossing a valley, I think, are worth repeating here. Extract 1: 'Coming down the White River in a canoe, we ran for more than forty miles through the herd as it was crossing that stream; the valley and high, bare mountains on each side as far as we could see, all the way, being actually swarming with caribou.'

"Extract 2 (by a different party): 'Approximately every hundred yards, for the ten miles we went up, there was a trail a foot deep cut freshly into the soil and between those trails it was, without exaggeration, impossible to put down my hat and not cover several hoof-prints in the inch or so of snow that then covered the ground. How far this condition extended up the valley I do not know. Unfortunately, with the exception of straggling bands, the herd had passed and I missed the sight of my life.'

"There are two colossal herds of caribou ranging, respectively, to the east and west of Dawson, which periodically swing their outskirts within the watersheds of rivers flowing into the Yukon adjacent to Dawson; and at such times only will caribou, to any extent, be found in the market. The eastern (called the Peel River) herd is the most familiar and accessible to Dawson hunters, as the Klondike River, flowing through Dawson heads in this herd's particular range. The western or White River herd is less accessible, owing to rivers that

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penetrate their range, discharging into the Yukon at considerable distances away from Dawson. (Frozen rivers are the highways during winter.)

"The Yukon River, bordered on both sides by some fifty miles of timbered foothills, keep those two herds apart. The near edge of the western herd was within fifty miles of Dawson last winter, but was unmolested except by miners in its vicinity, and a few Indians who hunted for the limited Dawson demand. The eastern herd (the most familiar) wintered last winter in the Mackenzie River watershed, three hundred miles away from Dawson. As reported by the North-West Mounted Police Patrol of four men and an Indian interpreter, which annually makes, during winter time, a six hundred mile trip from Dawson to Fort McPherson on the Mackenzie, and back, for more than two hundred miles they travelled through a country which was thickly occupied by this herd. The patrol left Dawson on the first of January, 1909, and got back about the middle of March. The Herschel Island patrol meets the Dawson patrol at Fort McPherson, and mail, etc., from the whalers, police and others wintering at Herschel is exchanged for mail, all kinds of reading matter, government documents and so forth, brought from Dawson."

Tarandus rangifer granti (Allen). In the autumn of 1901, Mr Andrew Stone found a race of Arctic caribou on the Alaskan Peninsula in the open country beyond the eastern limit of trees. It was named by Dr J. A. Allen *R. granti*, in honour of Mr Madison Grant. In summer it ranges up the mountains and in winter descends to the lower barriers near the coast. Formerly these caribou are said to have existed on Unga Island, where they are now nearly extinct, as is also the case on Unimak Island at the extreme western point. Of the fifteen specimens in the American Museum of Natural History, the horns of the males are similar to *T. r. arcticus* but very short, whilst the skulls are slightly larger. The body markings are similar.

Tarandus rangifer stonei. Mr Madison Grant regards this as the largest member of the "barren-ground" groups, but in most of its characters it seems to be allied to *T. r. osborni*, which he includes in the "woodland" group. In fact, the horns, which are the principal feature of the characterization of this sub-species, are said to be remarkable for the length of the tines. This certainly is the case in the specimens found in the New York Natural History Museum, brought from the Kenai by Mr Andrew Stone, but such is not the case in specimens brought from the same area by



STONE'S CARIBOU. From Alaska Peninsula, 1909.

Length 61 inches.

PLATE XCV.

THE CARIBOU

Mr H. E. Lee (see "The Deer Family," p. 280), which are evidently very similar to the examples of *T. r. osborni*. D. G. Elliot, writing in the same volume, says (p. 281), "*R. stonei*, from the Kenai Peninsula, possesses no characters not found in *R. montanus*, and cannot be separated from it." *T. r. granti* is said to possess a large white rump patch and white tail with a dark line running down the centre, whilst *T. r. stonei* is said to have a dark rump.

Tarandus rangifer osborni. This giant form of *T. r. montanus* is found from Chilcotin northwards and through all the high plateaux of the mountains above the Skeena, the Stickine, the Liard, the Yukon and its main tributaries. It is the largest of the western caribou, but until we obtain complete specimens of the giant race of the Labrador caribou, of the George River and Chidley Peninsula, it must be doubtful if it is the largest of all reindeer. In its northern ranges and in Cassiar it is more or less stationary, frequenting both the high wind-swept plateaux and the forests below to river levels. In Cassiar I found them on the highest mountains of 7,000 feet, and found fresh spoor of wandering bulls down in the woods nearly 3,000 feet below in the home of the moose. On both sides of the Yukon the caribou is very migratory, and vast numbers sometimes trek north and south in early spring and late autumn, performing migrations similar to other reindeer when moving in compact bodies. In America these deer are more or less stationary. The horns of these caribou are very fine but variable, in form ranging from the palmated "Newfoundland" type to the spindly and long pointed *stonei* type.

Again many of the Cassiar specimens have wretched brows and bays and enormously flattened tops, with additional top branches falling backwards.

In Cassiar we find all these types of horns, but further north on the Macmillan the heads are apparently very uniform, being long with horn growth more or less evenly distributed. In Cassiar one day I had the good fortune to find twenty-seven big bulls together. All except one were of the long straggling type, with poor brows and bays and big points of varying length at the top. One of them must have been over 60 inches in length and another had palmated tops with smaller branches. The exception was a magnificent head of the "Newfoundland" type with the mass of horn evenly distributed, with a great amount of palmation throughout and fifty-three points. I was lucky enough to kill him after an exciting stalk. I think that the heaviest head which I have seen from this district is the

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one shot by Major Norrie near Dease Lake, and now in the Natural History Museum, London. The tops are very massive and the span between the horns nearly sixty inches (though I have not yet measured it).

The largest head of this race was shot by Mr Clifford Little in 1907 to the south of Telegraph Creek, and I give its portrait here. It is a typical head of *T. r. osborni*.

In 1911 a head of 61 inches was obtained in the Cassiar country and another of 62 inches was killed in Alaska a few years ago, said to be *T. r. stonei*, and now in the possession of Mr Case of Juneau.

The measurement of two bulls shot by myself in Cassiar was 47½ inches and 49 inches at the withers, and 95 and 98 inches from the nose to the root of the tail. In weight they certainly approach the wapiti, and are said to scale as much as 550 to 700 lb. (Grant); "a specimen killed in the summer of 1912 measured 4 feet 11 inches in height at the shoulder and 7 feet 9 inches in length." (Grant.)

Although there is great variation in pelage this may be said with truth to be a "black caribou," for I have seen one specimen that was dusky brownish black all over except the anal portion, round the testes, and surrounds of hoofs. The neck is usually grey with the "beard" white and belly dusky grey, but the neck of the fifty-three pointer, already alluded to, was quite white, which is probably very rare as I have not seen a similar specimen.*

The specimen in the Natural History Museum, shot by Mr F. C. Selous on the Macmillan headwaters, seems to be exactly similar to those of Cassiar, and I can see no difference between these and the Chilcotin caribou shot by Mr Sage and those of the Itcha Mountains of Central British Columbia.

Mr Lydekker ("Field," Dec. 6, 1902) says that "the antlers (*T. r. osborni*) moreover, correspond in form and proportion with those of the barren-ground reindeer, and thus serve to connect the Selkirk and Alaskan race. The distinctness of the Cassiar from the Selkirk caribou accordingly seems to be well established." I cannot agree with this, for the heads of the Cassiar race, as I have pointed out, embrace every type of reindeer antlers, varying from the short, massive and thick Newfoundland type to the spindly type found in *T. r. stonei*, whilst the body markings are in most cases absolutely similar to those of *T. r. montanus*. In both cases there are the

* Since writing the above I have seen in Messrs R. Ward & Co.'s possession two heads of male caribou from Cassiar, shot in 1913. Both of these had pure white necks.



OSBORN'S CARIBOU. 50 points.

Shot in Itcha Mountains, B.C.



TYPICAL HEAD (59 inches) OF OSBORN'S CARIBOU.

Shot in Iskoot Mountains, B.C., by Mr Clifford Little, September, 1908.

THE CARIBOU

same variations of individuals of light and dark horns, and I can show pictures of examples from both which bear this out.

Tarandus rangifer montanus (Thompson-Seton). This variety of the reindeer was first described by Mr E. Thompson-Seton in 1899, the type specimen coming from the Selkirk range in British Columbia. It inhabits the mountains of Kootenay, Fort George and Southern British Columbia, and is also found in Alberta, North Montana, Idaho and Washington. Northwards it probably merges in the Itcha Mountains and Chilcotin into *T. r. osborni*, which is doubtless an improved variety of the same. Nearly all the specimens of this race are very dark, especially on the upper parts of the body, the neck and under parts being lighter; but I have a sketch of one in the Natural History Museum at Victoria, which was killed at Bella Coola, British Columbia, which has a very light grey belly and a black lateral stripe similar to European reindeer. These aberrant types or reversions to a former one seem to occur in nearly all local races. There is very little white in the anal region of this and Osborn's caribou, and the legs are almost black, with hocks often pale grey or almost white. Professor J. A. Allen, in describing the relations of *T. r. montanus* and *T. r. osborni*, says that "the specimens of *R. montanus* are without measurements, but the species is apparently about the same size as *R. osborni*, as shown by the measurements of the skull." This is not, however, the case, for those in the Victoria Museum and in Sir Peter Walker's collection are much smaller animals than those from Cassiar.

In the original description of this sub-species it is said that the hinds are much darker than the stags, especially in the neck and shoulders, but have the light ring above the hoofs, and the nose and edges of the lips, pure white instead of grey. This, however, I have not found, for both males and females are as often as not grey on the nose and edges of the lips, and in general colour I cannot see that *T. r. montanus* differs in the least from *T. r. osborni*.

The Queen Charlotte Islands caribou, *T. r. dawsoni* (Merriam). A reindeer of small size and with absence of, or indistinct, colour markings. Throat mane weakly developed. Imperfectly developed antlers. The coloration is very uniform and pale throughout, the general tint being a dull drab. Top of head pure white, nose pad to horns, pale drab chocolate; shoulders, upper half of back to tail and outer sides of thighs, drab; flanks, greyish with indication of dark horizontal band below; fronts and outer sides of legs and thighs paler and melting into greyish white

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of the ankles; upper side of tail, drab and slightly paler than the back; rump patch absent; other parts whitish (Merriam). The skull and horns are like those of an immature Scandinavian reindeer. I examined the skull and single antler of an adult caribou found in a glacier at the mouth of the Stikine River, and owned by Mr Gray of Wrangel, which seems to be identical with the above sub-species. Perhaps in former times this form extended its range to the mainland opposite.

Range. Only found in the Queen Charlotte Islands and now probably extinct. This sub-species was described from the type of four other specimens now in the Provincial Museum, Victoria, B.C. Dr Merriam, however, considers it to be a species.

In concluding this short survey of the caribou of the mainland and adjacent islands of North America, I have only attempted to come to some definite conclusion as to the position of local races and their approximate ranges. Whilst fully aware of the fact that these theories are open to criticism by the followers of the different groups of naturalists known familiarly as "splitters" and "lumpers," I do not wish to be dogmatic but only logical. It is evident, however, to all who make a serious study of any animal in all its varying phases under different conditions, that none of these local races of reindeer on the American continent are species as our friends across the Atlantic have described them, but are at the most only sub-species of the type first described, namely *T. r. typicus* of Scandinavia. On this point I am quite in agreement with Mr Lydekker who says ("Field," Dec. 6, 1902):

"American naturalists regard all these local forms as distinct species, but in a work on the game animals of Europe, Northern Asia, and America published last year (at which date six of these American forms had been described) I ventured to class all of them as local races of the species typified by the reindeer of Scandinavia. And as new forms, some of which tend in many respects to connect the extreme modifications presented by the barren-ground and woodland reindeer, are described, I am more and more convinced that this has most to be said in its favour. Not that I would go so far as Dr H. Winge, of Copenhagen, who, in a recently published paper on the mammals of Greenland, declines to regard any of these local races as entitled to separation, for I think that many of them are perfectly well defined forms (and I am about, elsewhere, to add to their number by describing one from Novaya Zemlya); but I do



Cassiar B.C.
 points = 40
 Circumference = 41.24
 Length of antlers = 55
 Spans across eye = 10
 Spans across eye = 10
 Spans across eye = 10

Osborn's Caribou
 T. B. Osborn

From a Drawing

by J. G. Millais

OSBORN'S CARIBOU. 40 points.

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think they are so closely connected and so essentially modifications of a single type that they ought not to be specifically separated from the Scandinavian reindeer. Since this animal, like the elk, constitutes a genus by itself, the splitting up of what was long regarded as a single species into several is not so mischievous as in the case of a large genus. When, for instance, the wapitis of Asia are separated specifically from their American representative we are apt to lose sight of one important fact connected with the distribution of these deer, namely, the circumpolar range of one and the same general type. And, in a less degree, the same holds good when elk and reindeer are split up into different species. By all means let us name local races of all three forms, but let them be named so as not to lose sight of the essential fact (beside which all details as to local forms fade into comparative insignificance) that *Cervus canadensis*, *Alces machlis*, and *Rangifer tarandus* are circumpolar animals. Rather than risk this I would side with Dr Winge and decline to recognize even local races."

If we are to admit *T. r. stonei* and *T. r. granti* as sub-species we must also include *T. r. ogilvyensis*, and possibly the deer of the Porcupine and North Yukon as sub-species side by side with *T. r. arcticus*. Again, if *T. r. osborni* is recognized as distinct from *T. r. montanus*, so is *T. r. kewatinensis* from *T. r. caribou*.

Tarandus rangifer labradorensis is, I think, a good sub-species by itself, and is far more diverse in its cranial and horn characters from *T. r. arcticus* than any of the foregoing sub-species. To those who take a broad view of the whole question, and with them I am by no means in antagonism, there must remain only five sub-species in North America, namely: *T. r. caribou* (Canada, up to the limits of tree growth east of the Rockies); *T. r. terra-novæ* (Newfoundland); *T. r. labradorensis* (Labrador north to Davis Inlet, and Lake Mickikamau, west to Ungava, and north to Cape Chidley); *T. r. arcticus* (Northern Canada, west of Hudson's Bay, south to Lake Athabasca, north-west to Point Barrow and Alaska, south to North Yukon, the Ogilvy Mountains and the Alaskan Peninsula, west of Cook's Inlet); *T. r. montanus* (Montana, Idaho, British Columbia, and wooded Alaska, as far north as the Kenai Peninsula and tributaries of the Yukon).

To those sportsmen or naturalists who have set their hearts on obtaining any of the four varieties of caribou inhabiting the North American

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continent and islands it is necessary to point out that the habits of all these local races are much the same, and that the best time to meet with large numbers, from which alone it is possible to pick fine examples, is during the September-October migration. In most cases this is performed from north to south, but in some cases, as in Labrador and the extreme north, it has an easterly or westerly tendency. In most cases, however, it will be found that the best caribou are not strictly migratory and frequent the same forests or high plateaux at all seasons, so that the hunter can go direct to these ranges with every prospect of finding them. In spite of repeated warnings to the contrary I found on striking into new ground in Newfoundland that the best stags were very local in their movements, frequenting year after year the same river beds and adjoining forests or small tablelands, and these animals seemed never to move even when large masses of migrating caribou passed twice annually through their midst. They had, in fact, displayed intelligence in choosing a safe place where man, their great enemy, never came. The same may be said of the magnificent caribou of the high rolling mountains of Cassiar and the Yukon, which live in the same ranges year after year, having found certain places on these mountains where the snow is swept clear even in the severest blizzards of winter, and in consequence they are always able to obtain the necessary food supply without forced migration. It is also true that in this area caribou perform big migrations, but these are deer which have been forced out of some habitat in adjoining territory which, under certain climatic conditions, have failed to produce the means of existence. These moving deer, not understanding local supplies, pass right through the stationary animals, and travel on until they find an agreeable haven of rest. The hunter, however, must be warned that the great autumn migration on the continent of America usually takes place at a somewhat later date than it does in Newfoundland, and though means of access to caribou haunts is not difficult, the question of returning is another matter, fraught with both difficulty and sometimes danger. "*Sed revocare gradum, Hic opus Hic labor est,*" says Ovid, and this applies with incisive truth to the caribou hunter who finds himself overwhelmed with deep snow and ice blocking his pathway on the return to civilization. It is not a matter of great difficulty to reach Lake Mickikamau in Central Labrador and see the vast army of trekking caribou in late September, but the man who risks it must spend few days there and retreat as quickly as possible unless he wishes to spend a whole winter and spring in this cheerless wilderness. The same remarks



OSBORN'S CARIBOU.

Unusual form with large number (53) of points.

Shot in Tanzilla Mountains, B.C., by Mr J. G. Millais, 1908.

PLATE XCVIII.

THE CARIBOU

apply to hunting the Great Slave Lake herd and most of the deer about the Porcupine and the plateaux at the head of the Yukon tributaries and Cassiar. In any case this fall hunt is a rush and he is a lucky man who can find three or four first-class heads in a fortnight's hunting and make good his retreat. Certainly the finest caribou come from Labrador, Alaska, and North British Columbia, but few men care to risk the long journey and the great expense it involves, to say nothing of accidents to river and sea steamers, which are frequent, and the perils of canoe journeys and exposure in inhospitable regions. But on the other hand these are journeys for men of the best type, and we trust such are still numerous in England. The various drawbacks to this distant hunting for caribou are in the main the excuse why so many sportsmen go to Newfoundland to get their caribou heads. Here hunting is easy and pleasant, and if a man has just a little originality it is nearly always successful. Even in that small island it is absolutely necessary to break a fresh trail if the hunter desires to get specimens above the ordinary, for the best stags know that they will be shot at if they accompany the mass of migrating animals, and keep apart from them in the centre or north of the island where there are always many stationary deer. Twenty years ago a man had not to go far to kill a good stag, for numbers were always found amongst the rutting herds on migration, but the case is altogether different now. Practically no super-heads travel, and a friend who has been for four seasons on the line of the migration and has seen tens of thousands of caribou admits that he has never once seen a first-class head. In the course of four journeys into the interior, on two of which I spent several months on the island, being occupied with mapping fresh districts, I was granted special permission by the Government to kill what I required for food for my men. I was careful never to shoot a deer unless it was absolutely necessary or carried an exceptional head. In the four seasons I shot fifty-two males and four females, and obtained heads with 49, 45, 44, 40 and 35 points, four of these being magnificent specimens. Only on one occasion did I fail to get a head I desired and then the stag, which was travelling at dawn, got our wind from the camp and galloped away, so I only obtained a very difficult running shot at 250 yards. Needless to say the animal in question was a wonderful one.

All my best stags were found coming to drink at the rivers at dawn or sunset, passing from the dense forests across certain well-worn paths made by themselves on their route to feed, or frequently high plateaux

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during the rut in places where they had never previously been hunted. Certain friends whom I have sent to my Indian friends in later years, have found plenty of caribou in those regions I first visited, but not one of them has obtained a first-class head, and this I attribute to the fact that I must have killed the one or two exceptional beasts that had for years lived there without moving. This, at any rate, is my opinion and that of the Indians who accompanied me. When a "road" used for years by the same old bull is found it is well to make the camp near and down wind at the spot where the beast regularly comes out at eve and to wait patiently for several days. Sooner or later a chance is nearly sure to materialize and an easy shot obtained. But that shot must not be missed, for if it is, it is unlikely another will be gained during the season.

Another excellent mode of September hunting is to frequently climb trees and spy from them until a good stag is seen. This method is more difficult because the beast may move before it can be approached. Another, and by far the best as well as the most difficult, is to still hunt the caribou in moccasins in the "open" timber in September and October. The greater part of Newfoundland forests are too dense for this, but there are many places at the headwaters of the big rivers which are much frequented by old stags at this season and where they can be found by an expert hunter. I say "expert," because the Newfoundland fisherman, good fellow as he is, is not in any sense a "hunter," and though he calls himself a guide, he is, as a rule, quite incapable of "still" hunting caribou.

Although the caribou is so stupid in the open, or even when drinking in the river beds, he is a totally different animal in the timber. There he uses both his nose and ears to the full extent of their powers and these are not feeble, and so the hunter has to exercise all the caution and quietness he would employ in killing moose, to be successful. Having found a forest region frequented by caribou, the hunter must be shod in moccasins and move very slowly against the wind, quartering the ground backwards and forwards until the game is viewed. That this method may be as successful as any is seen by the fact that the writer, in company with Joe Jeddore, the best Indian hunter in Newfoundland, found nine to twelve adult bulls every day for four days on the Upper Gander during one season's hunting. It is true that none of these were worth shooting, but all were adult males. In addition we must have roused as many as we actually saw, for often we heard the dull crash and the subsequent run of retreating beasts which we had unwittingly put away. Caribou at this season, before they leave the woods, are both

THE CARIBOU

suspicious and belligerent and are sometimes likely to come towards the hunter under the impression that he is a rival, that is to say, if they have only heard a slight noise and have not got the wind. I got one of my finest heads, a noble thirty-five pointer, in this way. Having spied a good stag from a high tree near camp, I made straight for the spot through some dense timber. Having arrived at the place where I thought I had last seen it, I stood still and listened and then moved forward in circles as there was no wind. As I did so I heard a slight noise behind me, and observed the stag running forward towards my track, which I knew he would "jump" as soon as he approached it. A few yards from it he stopped and began to grunt his challenge, and then as he ran forward in a little opening I killed him with a chest shot.

Later in the season, when the caribou stag has come to the more open woods or plateaux and has obtained his harem, he is the easiest of all deer to shoot. In fact the hunter has merely to study the wind and advance out of sight to be sure of an easy victory. Sometimes the "travelling" bulls give a little trouble, as the hunter has to run long distances to cut their line of movement, and then good heart and lungs must be brought into play with steady shooting at the end. During the rut bull caribou, both the herd bulls and the "travellers," use the same cry, a sort of single or double grunt, "Urgh—urgh—urgh," with three or four quickly repeated grunts to follow, made by the breath being drawn in and expelled. This is a very easy call to imitate, and I have myself "called" many travelling males from a distance of 200 or even 300 yards. The herd bull will answer you in defiance, but he will not approach as males will do in search of females. At this season I do not think the males are any more faithful to their wives than moose. In fact, I am sure they are not always so. During the rut one season near Sylvester I saw from my camp three and four herds that were more or less stationary for several days. The males attached to them could easily be identified by the form of their horns, and in two instances the herd bull disappeared after two or three days. In one case a fresh male had taken the herd and in another the females were left unclaimed until we quitted the district. As is generally the case with all deer that take a number of wives by right of mastery, the best headed stags are often the poorest or the most cowardly fighters. All the best stags I obtained were either alone or accompanied by a single female.

During the rutting season caribou are generally found in small herds of from three or four to thirty individuals, and companies larger than this

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are only found at the end of the season when they are commencing to gather for migration. The first fall of snow at the end of September generally starts the herds in movement, and in Newfoundland this is generally in a southerly direction. Immense numbers come from the northern peninsula and cross the line between Gulf Topsails and Bay of Islands, but these are nearly all females and immature stags. The same weather produces a movement in the centre of the Island, the deer moving south until they eventually reach the south coast at the end of November.

In Newfoundland there are generally two distinct movements, which vary according to climatic conditions, the first as already described and the second at varying dates in November.

It is, however, obviously reasonable that the hunter should only be concerned with the first of these movements, because all the best stags shed their horns between October 28 and November 7. I have killed a stag whose horns dropped off as it fell on October 26.

Newfoundland is still the easiest place where the hunter can obtain some good caribou heads for his collection, but he must remember that if he wishes to get really good specimens he must go with Indians and into a place *where others do not hunt*. There are still good districts I know of in the north and south central portion of the island where sportsmen have not been and which are worth a visit; these are all a little difficult to reach, but present no obstacle to a man with a little originality. The next best place is Cassiar, in Northern British Columbia. Here the heads are magnificent but not always easy to obtain, as the climate is vile, the Indians surly, and cost of the expedition enormous. Nevertheless, if the hunter can accept these conditions he is nearly sure to see and probably to obtain some of the finest trophies the world produces. The same, too, can be said concerning the chase of the Labrador caribou and those of the Kenai peninsula (*T. r. stonei*). A good head of *T. r. caribou* is rarely obtained in New Brunswick, Ontario or Quebec, for the proportion of fine trophies of this variety is small and the deer by no means numerous. Several hunters have successfully performed the journey to Great Slave Lake and the Mackenzie basin region and have found the so-called "barren land" caribou, and returned with trophies during the same year, but it is a long journey and by no means certain in successful results, nor are the heads of this variety comparable in any way with those of the varieties already mentioned.

Several hunters, too, have been very successful in finding the caribou



No. 1. *Osborn's Caribou T.R. Osborn.*
 Showing uniformity of type found in Eastern Alaska.

No. 2. McMillan River Brit. Columbia.
 Sept 1904.
 a proportion of Caribou
 Dawson, B.C.

No. 3.

From a Drawing

OSBORN'S CARIBOU.

Showing uniformity of type found in Eastern Alaska.

by J. G. Millais.

THE CARIBOU

(*T. r. osborni*) at the head of the Macmillan and Stewart Rivers, Alaska, but here again the hunting season is very short and a road has to be cut from the river and the outfit carried up on men's backs, *before* the hunting ground is reached on the high plateaux. Both in this region and Cassiar caribou are by no means numerous, yet if a hundred animals can be viewed in the course of a fortnight's hunting one at least is sure to be a remarkable trophy.

Although in most cases the capture of a fine caribou head is merely a matter of patience, there are times when caribou are difficult to secure both in the woods and in the open hills. The American races are, like their more severely hunted cousins, the European reindeer, subject to sudden panics, and may start to travel without warning, at the same time alarming all the other herds in the neighbourhood.

"I have had to howl like a Dervish to keep masses of caribou from running over me," writes Mr Jack Lee, "when I did not want to kill any, and I have seen thousands of them on the bare hills and couldn't get within range when I *did* want to kill some. And I have killed moose, bear and caribou in all ways between both extremes." This very correctly sums up the peculiar tameness or shyness of the reindeer.

In early autumn when caribou males are river and wood frequenters, the hunter must be gifted with an equable temperament, superior to the bites of insects, and with endless patience. He must be possessed of dogged self-confidence in knowing that, sooner or later, the big bull that uses that well trodden "lead" must come into view some morning or evening. Time is of no object, for "sitting on a log" often secures a better trophy than is achieved by miles of weary timber tramping. Few hunters care for this mode of killing the caribou, but it has its charms for a man who likes contemplation.

When caribou live on the high mountain plateaux the mode of hunting is all activity. The band has to be found after miles of walking and then it may not be in a favourable situation, so that it is necessary to wait all day until the evening when the deer rise to feed and wander off to some open place where the winds are not tricky. This they nearly always do.

I always think that the best, as well as the most exciting, stalk I ever had at caribou was in the mountains of Cassiar in September, 1908. After an unsuccessful visit to the plateaux south of Dease Lake I was returning homewards, being ill with pleurisy and bronchitis, but a sudden change in the weather brought an improvement in my health, and a fresh desire

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to kill one of those reindeer giants before I left their country. My two Indians and myself moved along the Tanzilla River, and as we travelled my hunter Albert pointed out a high sugarloaf mountain to the north where he said a herd of the big caribou used to live. On my asking him if we could get there he replied that it was possible by cutting a trail through the forest, which would take two days. That day I killed a fine bull moose which cheered our spirits immensely, and so we turned up the mountains in the direction of the high hill we had seen. We reached a flat at about 2,000 feet the same evening and camped, and during that evening and the following morning my Redmen worked like Trojans and cut down nearly a hundred trees in the forest above. The place was full of dangerous swamps and when we started in the morning one of the horses was found to be missing. After much searching "Hell-fire Mary," a name richly deserved, was found nearly dead with cold, having sunk into a hole up to her nose. She was unable to move at first, but we built a big fire alongside her and gradually she thawed out and was able to proceed, though she was of little use for the rest of the trip. Her spirit was broken as well as her partiality for kicking out the brains of anyone who approached her incautiously.

On the evening of the second day we emerged on the high ground at timber level and within 500 feet of the caribou ground. The following day's hunt only revealed old spoor and the tracks of many wolves and a grizzly or two, but on the fourth day we were favoured with better luck. After ranging an immense area of ground that seemed just made for caribou Albert and I seated ourselves on a huge boulder to have some food, when the hunter suddenly pointed across the valley with his long red finger. I saw the deer at once and the glass revealed twenty-seven big bulls and two or three females. It was the most magnificent sight I have ever seen in the way of heads. All these Cassiar reindeer carry finer horns than those of most other regions and the poorest amongst them would afford a fine trophy.

There were massive, long, rugged and spindly heads that all looked desirable, but the king of them all was a short "snaggy" head that looked as if it carried sixty points. It was certainly the shortest head in the herd, but if a caribou head can be said to be beautiful it was that, for all parts were magnificently developed except the second brow shovel. I made up my mind that I would fire at that animal alone if I was so lucky as to get within shot.

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At the moment the herd was lying in a pocket underneath a long snow-brae or small glacier and the position of the deer was so admirably chosen that the wind came over the top of the hill and swirled down and completely round their position. The question of an immediate stalk was, therefore, impossible, but the formation of the ground was such that when the deer rose to feed, as they were sure to do in an hour or two, they were bound to descend to a small plateau about 300 yards below them. Across this the wind swept directly to within 200 yards of a long clump of dwarf spruces about 4 feet high. After partaking of our lunch and tying up the horse, Albert and I made a wide circuit and soon reached the tiny wood in question. The wind was steady as we surmised and it was now only a question of patience. Hour after hour went by and we were chilled to the bone ere the first bull rose to his feet and looked about. His example was soon followed by others, and to my intense joy they walked slowly down the hill in our direction. All, in fact, moved off except the big fellow whom I had marked as my prey. On, on they came, very slowly, until the first reached the moss on our level at a distance of about 120 yards, then down went his head and he commenced to feed. Each bull filed by within easy shot until one with a head of, I should say, over 60 inches, stood at broadside and offered an easy target. The laconic Albert then turned to me and said:

“Why you not shoot. There is not better in Cassiar.”

I felt the truth of his remark and was sorely tempted, for what he said was probably true from his point of view. A longer head I have never seen—nor shall see—but it meant that if I fired the sixty-pointer would vanish and that ever afterwards I should blame myself for yielding to his advice. So I merely pointed to the big bull that was still lying in the hollow, whereat Albert grunted and said nothing further.

The caribou in front of us fed slowly away and crossed the valley to the other side but the resting deer never moved for another half an hour. It was bitterly cold and I was shivering, and that is not good for shooting. Moreover, troubled with bronchitis as I was, I could hardly breathe in the rarefied atmosphere. At last I looked up for the hundredth time and there he was on his feet with the two does, moving slowly off, but not in our direction. They climbed some steep rocks and the bull at once followed them, and then, coming to level ground, they began to trot and then to gallop straight away. It was the most disappointing sight I had seen for years. But what on earth were they doing thus leaving the rest of the herd at such a time!

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"Wolves," ejaculated Albert, as if in answer to my thoughts. We searched the surrounding hills but not a wolf was in sight. I kept the glass on them till my eyes watered and then a strange thing happened. The bull suddenly charged past the retreating does and, lowering his head, stopped them on the path. They tried to dodge past him but he was too quick and, with a flourish of his grand horns, headed them back in the direction from which they had come. As quickly as they had retreated they returned, galloping along the hillside, and soon passed their resting ground, heading straight for our position. It was a moment of intense excitement. On they came to within eighty yards and then stopped, broadside on. I had merely to raise my rifle and plant a bullet behind the shoulder and the great caribou was mine. At the shot the deer on the far hill bunched together and might have stood but for the fact that my pony, hidden in the wood behind us, broke his halter and galloped out towards the herd. So strange a spectacle alarmed the caribou and precipitated their retreat, so that I only took two hopeless shots at about 400 yards. But the great head was mine. Though he had only fifty-three points and not sixty he is one of the finest trophies ever shot in the north-west, and I do not think that one with a larger number of points has been killed west of the Rockies. The tops were of great massiveness and carried a double row of snags, a very rare feature in any race of reindeer. The following day I had the good luck to find another very good bull with some smaller ones and, getting an easy shot, secured another fine example of this race. The brows and bays, as is the case with so many of these caribou, were very poor, but the tops were magnificent and much palmated and the length of the horn 57 inches.

THE WAPITI

THOSE who admire the beautiful in animal life would probably present the palm to the wapiti. This giant red deer may not present the grandeur of the Alaskan moose, the grace and elegance of the Scottish red deer or the American white-tail, the sinuous charm of the pallah or the nobility of the black-maned lion or Siberian tiger, but it possesses, or did possess, horns of such magnificence that they are without comparison amongst other ruminants, except amongst the old Polish red deer of the past. There is no finer sight than an old bull wapiti standing on the edge of a pine forest, with the peerless Tetons behind him and looking what the old novelists used to call the "Monarch of the Great Divide." He is there the perfect jewel in the perfect setting and we are not inclined to criticize him—until he moves. In the open his gait is apt to be somewhat heavy, though he advances with a certain pride of carriage that in a measure obviates this, but when we see him galloping through a dense forest, dodging the hanging sticks and avoiding the windfalls, our admiration is again excited, for despite his massive cranial ornaments he shows the wood expert at every turn. Scared though he may be, you never see him crash into a green bough or touch a single twig that will not bend or break. He knows his forest home and his own limitations as well as most woodland creatures, and is little of a fool unless driven into the open by winter privation.

The forms of wapiti which, I think, should be recognized by those who believe in local races are as follows:

Cervus canadensis (Erxleben). The typical form.

C. c. occidentalis (H. Smith). A dark wapiti with long and thin horns, found in the Olympics, Washington and British Columbia.

(*C. c. roosevelti* is practically the same as the last-named, only that the horns are short and inclined to "crown" at the top. Habitat, Vancouver Island.)

C. c. merriami (Nelson). Paler and more red than the typical form.

C. c. nannodes (Merriam). The very pale and dwarf wapiti of Southern California.

C. c. manitobensis (sub-spec. nov.). The darkest form of the wapiti, with very dark neck and sandy brown upper parts and small horns, rarely exceeding 50 inches. Habitat, Manitoba and Eastern Saskatchewan.

There are very fine wapiti still existing on the east side of the main

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range of the Rockies in Alberta, both to the north and south of the Banff. I have seen fine heads of these and they seem to be identical with the typical form. In all the above local races there are slightly cranial differences which can be seen when a series of skulls are examined.

Jacques Cartier, ascending the St Lawrence in 1535, was probably the first white man to see the wapiti in the new world. He reports quantities of "stags, deere, beares," and as the wapiti has always been the "stag" of Canada it is likely that these animals were common at this date over the whole of the eastern forests of Canada.

Nina de Guzman, who explored the west coast of Mexico in 1532, mentions "many deer of very large size" on the banks of the Yaquimi and may also have seen them and antedated Cartier. In 1605 Captain George Waymouth reports "Olkes or Loshes" on his voyage to Virginia and this is the first mention of the word "Olk" or "Elk," the name by which the wapiti is generally known throughout North America. Champlain (in his map, 1632) and Father Lemoine (1653-4) seem to have found these deer in Ontario and around Montreal. Subsequent travellers both in Eastern Canada and Eastern America bear testimony to the abundance of these animals and the roads they made in their habitats.

Mark Catesby thus writes in 1731 on the subject of "The Stag in America":

"They usually accompany the Buffaloes, with whom they range in droves in the upper and remote parts of Carolina, where, as well as in our other colonies, they are improperly called Elks. The French in America call this beast the *Canada Stag*. In New England it is known as the Grey Moose, to distinguish it from the preceding beast, which they call the Black Moose."

In 1777 Erxleben described it as a species and in 1806 Dr Burton adopted the name of wapiti, which is the title given to it by the Shawnee Indians.

The range of the wapiti to-day is but a very limited one, and that only maintained by preservation, which is far from being strict, compared with what it was in former times, when it was found in nearly all the temperate regions of North America, from the Atlantic to the Pacific, except in the great prairie basin. There is reason to believe that it existed in Nova Scotia, whilst the St Lawrence basin was a favourite resort. In this district it was said to have lingered until 1814. Western Pennsylvania seems to have been a great resort of wapiti at the end of the eighteenth century, for Dr Burton (1806) says, "Within the memory of many persons now living the droves of elks which used to frequent the salines east of the River

THE WAPITI

Susquehanna, in Pennsylvania, were so great that, for five or six miles leading to the 'licks,' the paths of these animals were as large as many of the great public roads of our country."

The original range of the wapiti was roughly some 2,500,000 square miles. The species vanished slowly from the east in the early part of the nineteenth century and from a considerable portion of its western habitat. Despite the constant attacks of Indians on wapiti and bison it is more or less proved that they made little difference in the numbers of these animals; but the white men, with their accurate rifles, followed by the railways cutting through the north and south of the ranges, soon completed the great destruction which may be said to have occurred between 1840 and to-day.

At the present moment there are in the Yellowstone Park and its adjacent territory some 45,000 head of wapiti, but these again are being rapidly reduced not so much by the shooting of men as by the gradual shrinkage of the winter range. Only a few years ago all the country about the Snake River, Jackson's Hole, was unfenced and the deer in winter could roam away to the Bighorns and into Montana and Idaho, but now an iron fence holds them back on all sides, and if they break through they are often mercilessly slaughtered by the farmers who wish the grass for their stock. In consequence thousands yearly die of starvation, particularly the young stock, and were it not for the kindness of some of the farmers in Jackson's Hole, who do their best to preserve these fine animals, thousands more would perish.

The result of all this curtailment of range and poor feeding is that the wapiti of this part of North America are not the grand creatures they were thirty years ago, and evidence of this is shown by the fact that no good heads are now ever killed in this area. I have not seen a good wapiti head in the London taxidermists' shops since Mr Moncrieff killed his fine specimen nearly twenty years ago, and the American naturalists tell the same tale. Those giants of the seventies and even eighties shot by the Coopers, Mr Williamson, Mr Baillie Grohmann and a few other Englishmen have gone for ever and, in their place, the hunter must be content with the twelve pointer of about 45 inches in length. There are, it is true, still a few grand wapiti left in North America in two small areas, but I do not feel disposed to disclose their home or the difficulties of obtaining them.

In Manitoba the wapiti which always existed in the south-west part of the province were rapidly on the decrease until 1895, since which date they have increased again owing to a fair measure of protection. They live in dense forests and "muskeg," and this forms a natural protection; but

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in certain hard winters, such as 1906, the deer move into the open in search of food and come to cultivated lands of the farmers situated near the Duck and Riding Mountains and the Pembina. In this year alone it is estimated that not less than 1,000 wapiti were killed by farmers and hunters who paid little attention to the game laws. In 1908 I saw in Winnipeg about forty heads of adult males, some of which were fine specimens, the best being 54½ inches in length. They had all been killed in 1906 in the middle of winter. Charles Barber, the head game warden, stated that 445 were killed legally in that year and 365 in 1907, but this by no means includes the actual number that were shot. In most years but few of these wapiti are killed and they undoubtedly appear to be increasing.

In East Kootenay, British Columbia, there are a few wapiti which are carefully preserved and certainly increasing, and a single old bull is now allowed to be shot, as Mr Williams informs me; whilst in Oregon and Washington on the Olympic ranges there is a close time for these animals which may be extended for some years. Owing, however, to the density of this country and the difficulty of watching it there is still a good deal of unauthorized shooting.

In Vancouver Island Nature is a very efficient game warden and few wapiti are killed. My uncle, Mr Melville Gray, who recently hunted there, says that a man is far more likely to break his leg than to kill a wapiti, as the fallen timber is so stupendous and, judging by what I saw in one wapiti haunt up the Campbell River, I should say that this is a very fair criticism.

I think that Mr Thompson Seton's estimate of the present numbers of these animals in North America is a very fair one. These he gives as follows ("Life Histories of Northern Animals," p. 48):

Yellowstone Park	20,000
Wyoming, outside the Park	5,000
Manitoba	5,000
Idaho	5,000
Montana	4,000
Vancouver Island	2,000
Washington	1,500
Alberta	1,000
Saskatchewan	500
Oregon	200
California	200
British Columbia	200
Minnesota	50
In various Zoos, Parks, etc.	1,000
Total in 1907	<u>45,650</u>

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Dr Hornaday gives the measurements of an eight year old bull as follows: Length $86\frac{3}{4}$ inches: height at shoulders $56\frac{1}{2}$ inches; circumference of chest 78 inches. Andrew Williamson in his book gives the height of a very large bull as seventeen hands, or 5 feet 8 inches at the shoulder (this, I think, is excessive); 9 feet long, and 6 feet 8 inches around the chest. The bull measured by Dr Hornaday weighed 706 lb. live weight. Mr P. Dunham ("Recreation Magazine," April, 1896) weighed a bull whose entrails had been removed, which gave 800 lb. This would give a live weight of about 1,000 lb.

The colour of the upper parts of the body is brownish or yellowish grey; reddish-brown on the chest and belly, turning black on the latter later in the season; dark brown on the head, neck and legs; inside the ears, round the eyes, each side of the lips and on the chin, pale buff; bordering the whitish anal disc is a brown-black stripe. Late in the winter and in early spring the upper part of the pelage fades until males look, at a distance, almost white. The summer coat is a little darker than the winter one. Females are somewhat darker than the males at all seasons. The crowning glory of the male wapiti is its horns which, in former days, were of great size and beauty. Even so late as 1886 heads that were over 54 inches were not common. One day in this year, ascending the Big Horn Mountains, my brother Geoffrey, who for ten years was a rancher there, took me to see the great shedding ground of these animals as they left the foothills and Bad-lands in their annual spring trek to the higher mountains. For centuries this range of hills, situated about fifty miles north-west of the Powder River, had been the resting place for a few days of these animals, and here they had stayed on the southern slopes shedding their great antlers. It was a marvellous sight, and one that will never be witnessed by man again. As we approached the place it looked as if some forester of the past had been felling trees and had left all the shaggy branches to rot on the ground, but there was no timber there, only a vast collection of fallen antlers in every shade of decay, from white, bleached, and broken stumps that fell to pieces at the touch to recently shed horns that were still brown and hard.

We wandered amongst this vast collection, numbering, I should say, three to four thousand pairs, for most of them had been shed close together, and picked up and admired the best. The best I found was 60 inches in length, massive, but old and nibbled by chipmunks. One noble head with the skull attached carried twenty-one points and presented the rare

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feature of a perfect bifurcation on both horns. In the following year my brother brought up a horse and took it to the railway, a distance of 350 miles, and it is now in my collection. This great collection of horns afforded a fine view of what antlers wapiti could grow and what was the average size of the horns and it showed that even at this date, when there were many finer ones, examples over 54 inches were rare.

The head which is said to be the longest and widest is the specimen in the possession of Mr Sheard, of Tacoma, Washington, and of which he sends me a photo. It is said to be 69 inches long and 70 inches wide. It is not massive nor are the points good, and judges of horns would hardly give it the place of honour amongst the best trophies. Still, it is a very remarkable head, and the more so as it came from the Olympic Mountains in Washington, a country that does not, as a rule, produce the best class of wapiti. Another wonderful head which I have not seen is the 66½-inch head in the Montana Armoury. It is said to possess twenty-one points, but this must be an error, as Mr Thompson Seton's figure of it ("Life Histories of Northern Animals," p. 58) only shows thirteen points. The next longest is the fine head of 64 inches, owned by Messrs Shoverling, Daly and Gales, the New York gunmakers, and this is certainly one of the six best I have seen.

I think that the three best wapiti head I have personally inspected are the twenty-one pointer, 54½-inch head belonging to Mr W. A. Tulloch, the 60¾-inch head with twelve points belonging to Mr W. Baillie Grohmann, and the 59-inch thirteen pointer now in my possession and formerly in the collection of Viscount Powerscourt. All these three are absolutely ideal specimens with which no fault can be found. My specimen is perhaps the heaviest and roughest, it weighs over 50 lb., and the coronet is 16¼ inches, whilst Mr Tulloch's twenty-point head is of ideal form with very sharp points and fine rough horns. It is not possible to say which is the best because each would have its own group of admirers.*

I think that the most massive head I have seen is the great head killed by my late friend, Andrew Williamson, in Colorado. It has not yet been publicly exhibited but I hope that it will be seen in London in 1915. Heads with more than sixteen points are rare. There are the bifurcated head of twenty points in my possession and the twenty pointer belonging to Mr

*Under the auspices of *Country Life* we are arranging a series of the best big game heads in the world. Last year we had a successful little exhibition of British deer heads, and this year we have had one of African heads. In 1915 it is hoped that the finest examples of American game will be shown, and that the wapiti heads will furnish an interesting feature.—J. G. M.

WAPITI (*Cervus canaaensis*)

PLATE C.



THE WAPITI

Tulloch, already referred to, whilst Mr J. N. Leek, of Jackson's Hole, has a grand specimen, very massive throughout, of eighteen tines. The record number for points is one of twenty-eight which belongs to Mr W. W. Hart. It is very short and massive.

Innumerable instances of malformed heads are known amongst wapiti and need scarcely be referred to, and it is somewhat strange that "hummels," or hornless stags seem to be unknown amongst wapiti, as they are common in red deer and not very rare in reindeer. A female wapiti in the Jardin des Plantes grew one horn on the left side of her head for several years.

It is a truism that the trash of one age is the treasure of the next. Thirty years ago no one could have thought of picking up a 60-inch wapiti head, yet recently a good, but by no means perfect, example was sold for £250, and I saw one exposed for sale at Banff in 1908 for £150 and another in Salt Lake City for the same figure. When we consider that a King of Saxony once gave £1,000 for a fine red deer head, and that if exposed for sale to-day several of the Moritzburg red deer heads would probably command an equal price, it is not surprising that the finest of all horns should rise greatly in value and especially so as the race of giant wapiti is practically extinct. In the whole world there are probably only twenty-five first-class wapiti heads, and these, even if considered solely as specimens of natural history, are sure in the future to command exceptional prices. A small Charles II crystal or a Persian lustre plate, with childish designs upon it, now fetch anything from £2,000 to £4,000 so that it is not a dream to think that the day may not be far distant when we shall see a big Alaskan moose or old Wyoming wapiti head fetching a half or a quarter of these figures.*

Besides the above first-class wapiti heads there are a few others in English collections that are almost of equal merit. The late Sir H. Seton-Karr possessed a grand twelve pointer of $59\frac{1}{2}$ inches. The late Mr Frank Cooper had a very long head of sixteen points, $62\frac{1}{2}$ inches long, but it has been sold and I do not know its present ownership. I have a very massive and long seventeen pointer of 62 inches, and the late Mr Otho Shaw possessed a beautiful specimen which, although only $55\frac{1}{2}$ inches long, was a head of high quality. Mr Ernest Farquhar also had a fine 62-inch head of fourteen points and in Windsor there is, at the entrance, a noble specimen of $59\frac{1}{2}$ inches owned by His Majesty the King.

*I saw a buffalo bull's head in Banff that had recently been sold for £350, and a firm of London taxidermists told me that they had recently sold a very fine black-maned lion skin for £300.

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Nearly all the best wapiti heads have been killed in Wyoming with a few from Colorado and Montana. The only notable head from Idaho is the one previously referred to as exhibited for sale at Salt Lake City.

In former days the wapiti used to make a short migration from the higher grounds of the Bighorns and the main range of the Rockies down into the open foothills, or even into the "Bad-lands," so as to escape the deep snow. This movement also took place in Colorado and their more northerly and easterly habitats, but now those in the Yellowstone Park can only migrate a short distance down into Jackson's Hole where the climatic conditions in winter are still very severe. In former times, even until 1885, immense bands of wapiti left the Bighorns and, passing south by way of the Powder, came into the cattle ranges, where thousands were annually killed by the cowboys and Indians. Both on their downward, in early winter, and upward movement in spring, they collected sometimes in thousands, bulls and cows herded together, and presented a wonderful sight to those who were fortunate enough to see them. My brother Geoffrey has seen several of these spring migrations near his ranch on the Powder between the years 1880 and 1885 and has estimated their numbers as very great. Even in 1885, when Mr Wallihan took his photographs in Colorado, there were still large numbers to be seen in spring if the main trails were struck; but the wapiti there became more or less extinct in this state earlier than in the north, as the laws passed to protect them came too late and were too feebly enforced.

About the end of March the bulls get together in large parties and shed their horns. Unlike red deer, which often retain one antler for hours, or even a day or two longer than the other, wapiti shed both horns simultaneously, and as in the European species the new growth has already started to grow round and under the brow before the old horns are cast.

Once up in the mountain forests constituting their summer range the main herds split up into small bands, several bulls often remaining together. As the summer progresses these again separate, and it is common to find an old bull with a young one, who acts as a watch-dog, hiding away in some unfrequented forest or cañon. The females, too, separate as the period of producing the young becomes due. When the calves are born they are hidden and regularly visited by the mother whilst being taught to squat suddenly in some thicket at the advent of danger. In fact, all the summer habits of wapiti seem to be exactly the same as red deer, and to describe one is to enumerate the habits of both species. The males

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grow their horns at the same rate as red deer, and these ornaments are usually complete and rubbed clean about September 10. At first, when the velvet is stripped off they are pure white, but soon become chestnut brown and are always much paler than red deer antlers. In rare instances, especially amongst the Manitoba wapiti, I have seen individual heads nearly as dark as those of continental red deer, but not so black as Scottish and a few Carpathian examples.

About the middle of September the wapiti male is in his best condition and is then very alert and difficult to hunt. He feeds slowly, wandering through the forest, and frequently stops to listen even when enjoying his varied meal off the leaves of shrubs and ground plants which form his staple food. It takes more than usual cunning and quietness, backed by luck and no eddying winds, to find a bull wapiti at this season and obtain a shot. All their senses seem to be attuned to the possibility of danger just before the rut takes place, and this is the time at which wapiti hunting is really most interesting and difficult. After the bull has once collected his harem he seems to think of nothing else but love, and leaves all such things as sentinel duty to his wives. These fair ladies are often excellent watchers and as often utter fools. If you follow a band of wapiti you are struck with the extraordinary care they exercise in avoiding the possibility of pursuit by man. They move fast over straight and unbroken forest areas where the wind is in their faces and will give a fair advance to any hunter following them. He may be concealed and get close to them so they hurry up. In crossing open parks they simply dawdle and keep a sharp watch on their back tracks below and in front. In such places they know it is difficult to approach them, but they only halt and remain long in hollows and angles of mountains, where they know that the varying air currents that always swirl round to their delicate noses are sure to bring the taint of man from whichever direction he chooses to advance. The hunter, however, goes plodding on, and some day the wind suddenly drops or rises in such a way as to carry his scent out of danger. Perhaps he is extra careful and his rubber soled boots have for once made no sound. He rounds a corner and is face to face with the herd of cows and their attendant master. Then it is that wapiti often behave like utter idiots. They think that they have done everything possible to ensure safety, and now when man has beaten them they turn their heads and stare foolishly at him. A white-tail would give one graceful leap and vanish behind a tree, or give you the notion that he intended to stop and have a gaze and

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then bamboozle you completely. A red deer would give one swift glance and bolt, regardless of obstacles, and other deer would make a concerted dash down hill. Not so the "monarch of the Great Divide." He just stands and brazens it out in seeming surprise that all his arts, so generally successful, are of no account. You have, in fact, taken a mean advantage of him and he is slow to grasp its import until the forest rings with a shot and death overtakes him.

No chase in America, except perhaps that of the mountain sheep and the moose, is more fascinating than that of the wapiti. In the old days their pursuit was generally easy, because at certain seasons these animals were plain dwellers and exposed to attack on horseback, but now they must be hunted in the forest by the careful still-hunter and their pursuit is distinctly difficult. As Colonel Roosevelt says, "He is the grandest of the deer kind," and it should be incumbent on all true sportsmen to preserve the race. A few bulls may be killed, and this in reality does little harm, but cows and calves should never under any circumstances be shot. If this excellent advice had been followed in recent years there would still be an abundance of wapiti in Wyoming, Montana, Idaho and Colorado, but in a country where every man is a law unto himself and cares little for game regulations, the preservation of these fine animals is more than difficult. A considerable check to slaughter was made when the Yellowstone Park was isolated as a sanctuary, and for a time the wapiti were well preserved in the adjoining districts to which they worked out in winter; but recently much of the country to the west of the Snake River has been taken up by small ranchmen, who have killed the game recklessly on the pretext that the deer were devouring all the winter feed of the cattle. It has always been found that whenever civilization, in the shape of farmers, advances into the heart of a game country and the State is powerless to enforce laws restricting the shooting of local owners, the game has to go. No sentiment will check it. In spite of oceans of literature in the public press and the actions of game preservation societies, the rights or fancies of residents will always beat the law. Regulations are only enforced when the game has gone. The same deplorable state of things is taking place to-day in the home of the finest and most varied fauna the world has ever seen, namely, in British East Africa, and the administration is powerless to check the destruction. The travelling hunters, who give a fine rental to the State, amounting to at least £10,000 a year in licences, only destroy a small percentage of the males and in no way affect the quantity of game;

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but the resident settlers destroy males and females in vast quantities, on land, too, that is only fit for game, on the false assumption that it must be cleared for the purposes of raising stock, *when it has not yet been proved that cattle will live there.*

If it were not for naturalists and big game hunters there would be little game left in many parts of the world, and as the sport is a legitimate one, and the best of all sports for the making of soldiers, it seems a thousand pities that the State does not recognize this and appropriate large areas of country, that are proved to be useless for farming purposes, and make them into great State preserves where big game hunters may be allowed to shoot a certain percentage of males. The system has been tried in Kashmir, where game was threatened with extinction, and has proved a decided success. A head game warden is in charge of the whole of the mountain areas and he decides which nullahs may be shot and the number of rifles who may annually enter them. The result has been a great increase in the ibex, markhor, barasingh, and a satisfaction to the men who go to hunt there and leave their money in the country.

Wapiti hunting is ideal sport because it takes the hunter into some of the most beautiful scenery in the world. The pronghorn and the buffalo lived in the arid wastes of prairies, infested by rattlesnakes and bleached by the sun, whilst the chase of the mountain sheep involves hardships only to be endured by the strongest of men. The home of the wapiti calls up memories of delightful camps pitched in grassy glades amidst the scent of pines, whilst lovely lakes and pellucid streams, stocked with trout, are close at hand. How pleasant it is after a hard day's wandering in the woods to come home and lie on an aromatic bed of boughs and smell the good logs burning, drink the pure water, and enjoy the appetite that only comes from healthy exercise in the clearest and most invigorating air in the world. All the best wapiti grounds are, or were, situated over 6,000 feet in height, and the air there is like champagne without its false courage.

A herd of wapiti, or even a single bull, has a very strong scent, and it is often possible to detect their presence by this alone and so to find the game. One night in the Big Horns I heard a wapiti bull calling below the camp and at the first streak of dawn I crept out and tried to find him by myself. I was then a novice at timber hunting, but wanted to kill a bull alone if possible and surprise my brother and our hunter when they came to breakfast some hours later. The bull was travelling slowly, and after

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creeping over the endless windfalls I got close to him without being detected. Then he suddenly started up wind and I was able to follow him for more than a mile by scent alone, so powerful was the aroma that came from him at this season. Eventually he heard another bull "whistling" and started off at a slinging trot to meet him, when after an hour I lost him and nearly got bushed myself, returning to camp in a humble frame of mind.

When travelling, a wapiti, like a caribou, walks very rapidly, and if you are to overtake him you must run, and run fast. That is not easy unless the deer is in a semi-open country, for the western forests are so dense and so plentifully bestrewn with dry and fallen timber that it is no easy task either to advance quickly or without noise. A novice would think that so large an animal as a wapiti bull, furnished with great upstanding horns, could with difficulty force his way through the maze of obstacles without making a terrible row, but such is not the case. When alarmed there is usually one thump and a crack, and then, if you are so lucky as to see the bull, you will notice what an expert at timber craft he is. He leaps over big logs with ease, flicks his head from side to side as if his 40 lb. horns weighed nothing, never touches a growing twig or one that will not break, and vanishes at full speed without making a sound. He knows his home as you with all your skill and the adjuncts of quiet footgear can never know it, and once alarmed at some distance he will beat you every time.

I was nineteen when I first went to hunt the wapiti. Needless to say I made every mistake it is possible for youth to make and yet Fortune was kind and gave me some beautiful heads after I had given up all hope of obtaining them. It is a truism that we enjoy most those things in life which we have worked for, and I did work pretty hard to go to the Rockies. I had saved a little money from drawings done for the "Graphic" and other newspapers, but how on earth I was to get the £100 still required completely beat me for a time. At the psychological moment a good angel sent Henry Seebohm, the naturalist, to see my birds and he at once gave me a commission to draw thirty pictures for his "Charadriidae." This, with my pay in the militia, totalled £120 and the money was won. Every morning I rose at five and did a drawing of a wader before going on parade at 6.30 a.m. and in a leaky Government tent art was not a joy. Three weeks later my brother and I set out from Rawlins on a drive of 350 miles over the prairies and bad-lands. We had many adventures and nearly died of

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thirst before we reached the Big Horns and his comfortable ranch. Here we met Rattlesnake Jack, the hunter, and at once set out on our trip to their range about 100 miles to the north.

Though I obtained fine specimens of white-tail, mule deer and pronghorn, we never seemed to have any luck with the great stag. They were then, in 1886, getting scarce, and we only succeeded in moving one or two bulls, without ever getting a sight of one. August slipped away and the greater part of September, when one day Jack and I came on the fresh spoor of a travelling bull. He was feeding slowly through the forest amidst a field of blueberries—here nearly as large as cherries and delicious eating—when on looking up there stood the stag gazing fixedly at us about 100 yards distance. It was an easy shot and I missed it. Why recount the awful heart-burnings that followed. They are too painful to speak of, but they left me with a fierce desire to kill a wapiti if I had to stay in the mountains for years. Ten blank days followed and it began to snow, warning us that our stay in the mountains would now be short, and then we moved into Red Fork and commenced hunting in a new area.

September 22 broke a clear frosty morning as Jack and I set forth on our horses to work a forest to the north. We had hardly entered it when we found abundant fresh sign of wapiti. Accordingly, we left our horses and quartered the woods, slowly working up wind. We had nearly come to an end of the forest and were within sight of an open park when a crash on our left showed a fine bull racing through the dense timber and running as if for the cover behind.

"Watch that opening," said Jack, and I did watch it, placing a bullet at the spot where the white shoulder appeared. To my joy the beast stumbled and fell, but at once rose again and hobbled out of view. What a youth does and what he ought to do are two very different things, and with the usual impetuosity I did the wrong one, which was to follow at once, the result being that I jumped the bull three times and thoroughly scared him. Although his shoulder and foreleg were broken he made for the open park, and we saw the grand fellow running on three legs down the valley, ascend the further hill and disappear in a clump of wood about five acres in extent.

Then Jack did the right thing. "I guess we don't scare him no more," he said. "He'll lie right there and get stiff, and we'll fix him sure in the morning." Of course I rebelled against such a course, but was fortunately overruled.

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In no pleasant frame of mind we re-entered the forest to go to our horses. "What a head that bull had." "He must be the best in America at least." "I should never get such another chance, and now I had lost it," were some of my thoughts.

"Just look quietly to the right of that tree," said Jack, pointing to our front, and there, either I was dreaming or a big bull stood gazing upon us about forty paces away. I raised my rifle slowly, and taking a careful aim, pulled. The bull at once dashed off, but had not gone far when we heard a loud crash and running forward there lay a fine bull wapiti. It was an easy victory. The head was that of a nice twelve pointer but of no great size, but it was my first, and as such a thing to remember ever afterwards.

When we got to camp in high spirits there sat my brother Geoff, the most unselfish of mortals, in the depths of woe.

"Hullo, Geoff, smashed all your plates?" we said (for he was a keen photographer in the days of glass negatives).

"No," he wailed, "I have been on your ground and spoilt all your fun—besides, I have wounded and lost the best bull in these mountains."

Just by chance he had grown weary of camp and had gone for a stroll, taking his rifle. In the park adjoining the wood we had hunted he had come across a herd of about fifty wapiti controlled by a magnificent bull. After a long stalk he had fired at and hit the beast in the shoulder, and then had pursued and lost it. It was a sad evening round the camp fire, though Jack was quite cheery and hopeful. Next morning we ascended the mountain to the small five-acre wood, and leaving our horses crept quietly in, quartering the broken timber across the wind. In the very centre there was a rustling sound and suddenly a great bull wapiti rose to his feet in front of us. A single shot in the neck and he was down again.

"Why, this is not the bull we lost yesterday," I remarked.

"No, he's over there," said Jack, as we saw the bushes shaking about twenty yards to the left. Another big bull was then seen struggling in the young spruce and trying to regain its equilibrium, at each attempt falling backwards. Another shot rang out and all was over. We had got what we had hoped for, two splendid wapiti, one 54½ inches and seventeen points and the other 52 inches and twelve points, the latter being very thick and rough. If not the best killed that season in the Big Horns they were, at any rate, splendid specimens of this grand deer, and after thirty years I still look upon them with pride as two of the finest heads in my collection.

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Such examples cannot be procured to-day, for the great wapiti are gone for ever.

Prior to 1840 enormous bands of wapiti, possibly even exceeding in number those of the Rockies, roamed the great San Joaquin Valley in California. They lived entirely in the open like the buffalo, and before the great advent of miners in 1849 were practically free from molestation. The gold-seekers, however, wanted meat, and made great inroads upon them, for the deer were then tame and easily shot. It is interesting to note that Alexandre Dumas, the great novelist, turned market hunter as soon as he landed in California, and one of the first things he did was to kill an elk in the Sacramento Valley.

The new-comers, to get their game easily, made great corrals with lateral fences, miles in length, exactly of the same pattern employed formerly by the Beothic savages of Newfoundland and the Cree Indians of Keewatin to-day for the destruction of the migrating caribou. Into these corrals they drove immense numbers of wild horses and cattle as well as wapiti and pronghorns, and so secured an abundance of meat which was sold fresh or dried in the sun. In consequence of this harassment the wapiti soon became more cunning and retired to the tule (reed) beds situated along the marshes and lagoons.

On the dry ground behind these reed thickets are cattails and flags which themselves form dense cover, and this retreat, covering hundreds of thousands of acres in the Sacramento Valley and stretching right down to San Francisco Bay, seems to have been preferred by the great deer to the chaparral and timber of the neighbouring mountains. This was doubtless owing to the better feeding. There they made great trails and shared with the wild hogs comparative immunity from molestation, as men could not hunt there on horseback owing to the mud and swamps. But at last the marshes began to be drained, and the process of drying the ground meant the destruction of the tule brakes and with them disappeared the wapiti.

By 1875 the wapiti were almost extinct, whilst the last herd on the ranch of Messrs Miller and Lux near Bakersfield only owed their existence to preservation. In 1895, according to Mr T. S. Van Dyke, there were only twenty-eight left, but by close protection there are now thought to be over two hundred. These are the last wild wapiti left in the State where formerly they existed in tens of thousands. It is curious that the wapiti was never known in the Sierra Nevada nor in the great valley of the south,

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where all conditions of life exist that would have been agreeable to them. On the northern coast of California wapiti were fairly abundant until 1880, amongst the great redwoods, but when the desire for "heads" and elk-teeth became pressing numbers of hunters entered this region and nearly exterminated them. A few exist to-day and are closely protected.

The great density of the forests in Oregon, Washington and British Columbia has been the only safeguard of these fine animals in this part of the Pacific Slope, and to its deterrent influence alone do we owe a very fair stock of wapiti in these forests. Enormous numbers have been killed in the more open forests bordering the Olympics, but even to-day there are thousands of square miles where the foot of man hardly ever treads, and where hunting on horseback is impossible and heart-breaking on foot.

I have met several men who have hunted in the Olympics and they have generally returned in a chastened frame of mind with a minus quantity of wapiti. The fallen trees are so numerous, and the difficulty of breaking a trail, to say nothing of the noise created in so doing, is so great that until these timber jungles fall before the woodman's axe there will be little wapiti hunting. The States, too, of Washington and Oregon are careful to see that the travellers from distant lands do not get much opportunity for hunting, whilst a blind eye is turned on all infringements of the laws by citizens.

Mr T. S. Van Dyke gives a vivid picture of the home of the elk in Oregon ("The Deer Family," pp. 180-1). "Here you may find," he says, "great hills standing almost on end, ridge joining ridge in endless chain, where you may descend a thousand feet from the top only to find it break off in a precipice of dozens or hundreds of feet into a canyon still farther below. Nowhere can you find a place where you can take a horse down, and if you find one where you can make a toboggan of your trousers, it is by no means certain that you can return. I was once on such a ridge for four days with a party of four and nine horses. It was but six miles long and not over two thousand feet above the gulches that yawned all around it into the different parts of the Cognille River in Oregon. Yet we had to spend all our time in trying to descend to the river. A big drove of elk were just ahead of us, their tracks were everywhere, and many more were on the same ground. Everything showed that we were in their chosen home. There was hardly a sapling of any size from which a long strip of bark had not been rubbed by the elk cleaning the velvet from their horns, either in that year or the one before. Horns in all stages of decay were around us,



Photo by]

[Hy. Dixon & Son.

A PERFECT EXAMPLE OF THE OLD-TIME WAPITI. 13 points.

Length on outside curve 59 inches: Circumference between bez and trez $8\frac{1}{4}$ inches:

Tip to tip 48 inches: Length of bez 23 inches.

In the possession of Mr J. G. Millais.

PLATE CI.

THE WAPITI

with elk trails innumerable. But there was no trail of man to tell us where we could go, no feed but wild peas and a few small patches of grass that the horses could eat up over night, so that we should have to move on in the morning. Shade almost solid ruled over all. The Douglas fir towered one hundred and fifty feet on the hills, with trunks like ship masts mingling their feathery tops so as to shut out the sun, while down in the gulches the great Port Orford cedar deluged the depths with heavier gloom. Through the few openings from which we could look out upon the world there was nothing in sight but ridge after ridge, cutting the skyline with serried ranks of pine, and great gulches between, hazily blue with solid timber. The whole was interlaced with such a tangle of fallen trees that one would suppose an elk safe anywhere."

Such then is the forest home of the wapiti in Oregon and in a like degree in Vancouver Island, where the Douglas firs and cedars are even more colossal in size. Up the Campbell River, where a few of these deer are found, I attempted an experimental march, and after several hours of exhausting climbing over fallen Douglas higher than my head, as they lay on the ground amid dense thickets of ferns, six to eight feet high, had to admit myself defeated. Until the bracken is down it is not possible to hunt wapiti in this district, and even then the everlasting climbing over fallen logs or branches is more than severe labour. The few wapiti that are killed in Vancouver Island are usually shot by waiting at openings on lake or river beds as they come to drink at eve. If the hunter is so vigorous that he can surmount the various obstacles in this giant forest he may come upon the deer, which are often so tame owing to the security of their retreat that they do not always attempt to run away.

In East Kootenay the ground is more open and numerous small parks intersect the hillsides on the edges of the denser forests, and to these the deer come both to feed and to fight in the rutting season, so that there is a good chance of finding one in the open. One bull is now allowed to be shot, but the heads such as I have seen are very poor.

A few wapiti still linger in the Cascades and here there is a better chance for the hunter, as a wagon can be taken and most of the mountains are possible to penetrate even on horseback. Mule deer are very plentiful there, but the wapiti must be sought for about the headwaters of the streams that drain the gorges of the eastern slopes. This forest region is, like the Olympics, still very dense and wrapt in shade owing to the heavy timber growth; but to a man who loves Nature and does not mind scrambling over

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windfalls and steep slopes on the remote chance of getting a shot once or twice in a season, it offers great attractions, for its beauty is undeniable. As the traveller goes north along the Pacific Slope the rainfall increases, and in consequence the vegetation becomes denser and the trees larger, until the hunter finds himself a mere struggling atom amidst a wilderness of giant ferns, salal, vine-maple and salmon-berry, whilst over all Douglas firs tower to the sky and exclude all sunlight, even on the brightest day. Hunting the wapiti in such places is both a toil and an education, and most men find the education too severe. Nature is there built on so gigantic a scale that man and his horse are mere atoms, struggling to see giant game which may be gazing at the hunter within twenty yards and yet remain invisible. But such hunting has its charm and he who has once picked out a good pair of wapiti horns from such a jungle has indeed achieved something.

Formerly the wapiti was a day feeder but now he finds it more safe to lie hidden in some dense retreat where man never comes, and to feed at night or at dawn and sunset. Clever animals now learn to adapt themselves to local conditions, for it is only by so doing that they can in most cases exist at all in the neighbourhood of civilization. The wapiti has learnt that it is now unsafe to lie in the sun and has become a shade lover, but he has not yet learnt the danger of sound.

It is true that in some places the male only calls at night, but in the height of the rut the results of desire generally make him lift up his voice all day long to challenge his rivals, and this is often the cause of his destruction.

The call of the wapiti bull is generally designated a whistle, but it is hardly that. It is really a high-pitched roar followed by several grunts, and can be heard at a distance of two to three miles, about the same distance as the roar of the red stag, and not so far as that of the lion, which can easily be distinguished in mountains at a distance of six miles. A wandering bull keeps on challenging as it advances and could without doubt be "called" by man as the Carpathian stalkers do the great red deer. In fact, Mr Buxton claims to have shot the best head by the aid of a penny whistle. The Santæus Indians call wapiti to-day by means of a horn and are very successful in its use.

Where wapiti are little disturbed they will call all day, and many hunters have enjoyed the view and the chorus of two large herds meeting. In former times the wapiti were often in full rut during the autumnal

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migration, and the chorus emitted by a large number of amorous males must have been very interesting music. The males are very truculent and pugnacious, and probably fight more consistently than red deer, but not to such an extent as caribou.

In the rutting season the herds are in a constant state of turmoil during this period of love and war, and it is most probable that during three weeks or a month the bulls do not eat at all and so rapidly lose their condition. When two bulls meet to fight they lock and endeavour to push each other down hill. The heaviest bull and not the one with the best horns is usually the winner. In fact, the best horned red deer, wapiti and caribou are as a rule dreadful cowards, and the very fact that they are fearful to possess a harem makes them grow their fine ornaments. A male deer that has few opportunities for sexual enjoyment always comes out of the rut in good condition, whilst the battered warrior with many wives is a mere skeleton. I have seen this many times in parks and have noticed that the champion head was generally a fearful coward and kept well out of the way when fighting was going on.

Wapiti, like red deer, are very rarely killed or seriously injured in these autumnal fights, and the only time there is real danger in a blow is when one of the combatants turns to flight. Old stags are occasionally killed in not turning quickly enough, and one blow over the heart is sufficient to produce death. Quite one-half of the stags I have known to be killed in a certain park owed their deaths to fighting up against the iron park rails. The unfortunate one would suddenly forget that there was an impassable obstacle at his side and he would turn in that direction and be held for a fraction of a second. In that moment, the blow was given on his side by his rival and he died very soon afterwards. In deer thus killed not any external injury is visible, but the area of the wound beneath the skin is often very large.

Wapiti are very savage in confinement and cannot be permitted the freedom enjoyed by red deer, but in a wild state they will not charge a man as moose will sometimes do. Colonel Roosevelt gives two instances of wapiti bulls charging hunters, but I do not think they are convincing. In almost every old book the wounded grizzly bear is supposed to charge, whilst if we had the exact truth, it would in nearly every instance be found that the bear was merely retreating by the easiest route available. The behaviour of the wapiti in question may have been similar.

The great problem that faces those who wish to preserve the wapiti

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still left in Western America is the food question. Every year it becomes more difficult to find grass for the herds in their winter range, and thousands die in consequence in early spring. This is a question that only the Government can take up, and, unless it is settled in a satisfactory manner, very soon these animals, the finest of all horned beasts, and in many respects the noblest animals in the world, will be doomed to destruction except in enclosed areas. The American people are rich and the present stock of wapiti is still quite good; but what is required to preserve them, as beasts of the chase, is for the Government to purchase large tracts of lands in the old winter range and keep them exclusively for these animals, allowing a certain amount of hunting there. This could be done without any great expenditure and the annual hunting licences would provide a good part of the money required, whilst the pleasure of seeing large herds in good health and the joy of shooting an occasional bull would give much satisfaction to future generations. It is now clear that hunting in areas entirely surrounded by civilization can only take place and be successful where large tracts of country, which are not of much use for farming, are set aside for the purpose. The legitimate big game hunter is really the only preserver of wild game and more ought to be done to further his interests because he both "pays the piper" and preserves wild animals for others.

THE MULE & THE WHITE-TAILED DEER

SIX races of the mule, or black-tailed deer, are now recognized; five of them being smaller sub-species of the typical race. They are as follows:

Odocoileus hemionus (Rafinesque, 1817).

O. h. californicus (Caton). This variety is slightly smaller and has a dark stripe along the back and upper surface of the tail.

O. h. peninsulæ (Lydekker). Small and brightly coloured.

O. h. eremicus (Mearns). Very pale variety. California.

O. h. canus (Merriam). Very small and pale, grey in colour. Mexico.

O. h. columbianus (Richardson). The coast black-tail of the Pacific Slope, with all black on the upper surface of the tail. The ears are also smaller and darker than in the typical race.

The length of the typical mule deer of the Rocky Mountains is about 5½ feet; tail 7 inches. The usual weight of adult bucks is from 215 to 230 lb. but specimens of 300 lb. are said to have been taken. The female is much smaller and weighs about 137 lb.

In winter the pelage is a warm brownish-grey and the coat has a peppered appearance, owing to the presence of black tips and rings to the hair. A patch on the buttocks and upper surface of the tail is white, the end of the tail black. The head and throat are greyish or fawn-white, with a large black patch on the forehead and a black bar round the chin. The legs, below the knees and hocks, are rich Sienna brown. The breast is generally brownish-black, and underparts fawn. Caton points out that the short hair on the tail is only shed once a year, and it is said that the long black tail hairs are not shed at all. In summer the red coat is completed in May and retained until the middle of August, the legs slightly paler. The fawn is dull yellow and well spotted.

The name jumping deer, owing to its bounding gait when first alarmed, is used in Manitoba. The French-Canadians call it Le Cerf Mulet, the Crees, Ap-is-chick-i-koosh (small moose), and the Sioux, Tah-chah. The name mule deer is used all over the west and is doubtless due to the large size of the ears of this animal, but the name black-tail is also frequently applied to it.

Doubtless the first white travellers knew the mule deer, but it was not described and named until the Lewis and Clark expedition, in 1804, first found it on the Missouri. They mention it as the "black-tailed or

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mule deer," and say that it has "much larger ears than the common deer" (white-tail).

The mule deer ranges north to Manitoba as far as Athabasca Landing, and there is some reason to believe that individual stragglers go right up the Rockies into Northern British Columbia. About 1907 a deer, believed to be of this species, was killed near Telegraph Creek at the headwaters of the Stikine, and was either a specimen of this race or the Columbian black-tail. To the south *O. h. canus* takes its place in Mexico, and in the south-west along the California coast is found *O. h. eremicus*. From Oregon to Northern British Columbia the variety *O. h. columbianus* is found.

The main range of the mule deer is North Dakota, Texas, Colorado, Wyoming, Idaho, Alberta, Saskatchewan, and west to Washington. The exact district where the mule deer merges into the Columbian variety does not seem to have been determined, but mule deer which I have seen killed in Western Alberta seem to be somewhat intermediate in character.

Anderson and his companions met with the mule deer on their journey up the Missouri in 1843, and after this all western travellers seem to have noted its common appearance.

As settlers and hunters spread over the west this deer became a familiar animal and, with the pronghorn, was constantly shot to serve the daily menu. Being a much tamer and more generally distributed animal than the wapiti, the mule deer served as the principal food of all the mining camps, both in California and the main ranges of the Rockies, and thousands were annually killed for meat by the pioneers of the west. Mule deer were always more abundant and generally grew finer heads in Colorado than in any other state, and these performed annual short migrations in the spring and fall. Even until 1905 mule deer were still very abundant in Colorado. In September, 1901, Mr Thompson-Seton observed 750 deer in twenty-seven days. Their migration in the autumn is not performed, as in the case of the wapiti, in great bands, but in small parties or singly, and we have evidence of their tameness and abundance in the series of beautiful photographs taken in Colorado at this time by Mr Wallihan. Mr Thompson-Seton estimated their numbers in 1901 at 200 to the square mile in favourite localities.

Roughly the present area of the range of the mule deer is about 2,500,000 square miles, but in this there are now great areas where the

THE MULE AND WHITE-TAILED DEER

species is comparatively scarce. On the whole, however the regulations regarding the protection of mule deer are better enforced than in the case of the wapiti. One buck only may be killed in a season in Wyoming, Colorado, Idaho, Montana, etc., so it is reasonable to suppose that although the animals are not one-tenth in number what they were in 1880, they will survive for many years to come. If we except Colorado, where a few very fine heads are still annually killed, there is no better place for mule deer than the Chilcotin district of British Columbia. They are also fairly numerous in the Lillooet district, but seldom grow fine horns there. Before proper laws and protection were enforced mule deer were very abundant in Southern British Columbia, but a few years ago, in the eighties and early nineties, the Indians and a few white skin-hunters entered this region and nearly exterminated the deer. They also wiped out the sheep on the Semilkamin and the fine Osborn's caribou in the Itcha mountains.

There are a few very small mule deer in Southern Manitoba and Saskatchewan, but they are more numerous along the eastern foothills of the Rockies in Alberta, both north and south of Banff, and I have seen one or two really fine heads killed there recently by the Blackfoot Indians, who seem to be allowed to hunt as they like by the authorities.

The antlers of the mule deer are very irregular in character but are distinctly beautiful and a good head of this species constitutes one of the finest trophies of American big game. The horns are dichotomous, that is, they have an arrangement of even forks instead of a continuous beam. Near the base there is a short sub-basal snag, usually much smaller than in the white-tail, and on this, and surrounding it, is often much corrugation. The beam is at first directed outwards and then curves upwards to form a regular fork with prongs, which are again divided in two long points, the two branches being about even in weight and size. I have, however, seen many examples of mule deer heads in which the main beam was continuous and curved forwards, with long points on the top, in fact, almost exactly similar to white-tail; the sub-basal snag alone always being small. Mule deer heads are, however, rarely palmated in the upper portion of the main beam, as white-tailed heads often are, but seem to expend excessive energy in numerous small points or hanging snags which drop from the ends or middle of the main beam.

Very fine examples, which are certainly the handsomest heads, with a large number of supernumerary points, are not very rare but are now much

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prized. Most of these examples are in American collections, but I have seen a few in Canada and one or two are in English collections.

This is one of those trophies the measurements of which, unfortunately, are quite hopeless in giving the true value of the antlers. The head which tops the list in Ward's Measurements, and is 34 inches in length, is in my possession. It is certainly a magnificent example, but I have seen and measured many much finer. The head in question was killed on the Powder River, Wyoming, in 1885. Quite the best I have ever seen was one belonging to Mr E. S. Cameron, and killed by him in Montana. It is perfect in every particular and yet only measures 29 inches in length; yet it is $6\frac{1}{2}$ inches in circumference, $29\frac{1}{2}$ inches tip to tip, and has fourteen points. Another remarkable head I have measured is one shot by Mr H. A. James in Colorado. It is 41 inches in spread and also very thick. The late Andrew Williamson shot a very massive head in Colorado, with a span of 36 inches, and one I measured in Banff was 39 inches in span, the same figure attained by one killed in Chilcotin and owned by Mr Sage in Vancouver. The most massive head of which I possess a photo is one killed at Vernon, British Columbia, in 1892, and now owned by Mr W. F. Cameron. The whole main beam is palmated and covered on the top and outside by a perfect little forest of points, which are said to number forty-seven. The Earl of Lonsdale has a head (killed in Montana) with twenty-nine points and Mr C. R. Lutwidge has one from Wyoming with forty points and 32 inches in length. Mr Baillie-Grohmann, and the late Sir H. Seton-Karr each showed a fine head of twenty-six points at the American Exhibition in 1887. Scattered about in various homes in the west, particularly in Colorado, are many splendid examples, as good or nearly as fine as the above, but the measurements of most of these have not yet been recorded.

The mule deer is a partially migratory species which leaves the high ranges, in which large numbers live in summer, for the foothills and even the "bad-lands" in winter. Nearly all move for short or longer distances, varying from 20 to 150 miles in October, and follow well-defined trails. In Colorado they migrate in October with regularity, seeking the low hills where the heavy snow does not lie. Most of these move westwards for 100 to 200 miles into the Uintah country in Utah. In many parts of Wyoming, Saskatchewan, British Columbia, Manitoba and Idaho, the mule deer is not migratory, being found in the same ranges of low hills at all seasons. Here they will stay unless subject to constant persecution, only circling

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and coming back to the same area if moderately hunted. Nevertheless, the mule deer always dwells in a less confined range than the white-tail, which will frequent the same cane-brake or willow swamp year after year unless killed or driven out. Like most of the deer this species in its summer habits is either found solitary or in pairs. It is very common to find two bucks consorting together at this season, and the friendship is always that of a large and a small buck, the latter being used as a sentry to the big fellow. Parallel instances are found in red deer and wapiti.

Towards the end of April the winter parties split up and in May the female wanders off alone and frequents a narrow area of scrub, which in future is useful to conceal the fawn shortly to be born. At the end of May the female produces one, two, and sometimes three fawns. The ground colour of the young is paler, yellower and duller than the calf of the white-tail, but otherwise much alike. The mother hides her young for six or eight weeks in dense thickets, coming to feed them at dawn and sunset, and permits them to follow her as soon as they are able to nibble the grass and gallop swiftly. She is a good mother and hides her young, or flies with them, according to the degree of danger or the place wherein it takes place. The female makes a loud "blow" or "whistle" when alarmed and the male a snort. In the fighting season the bucks occasionally make use of a barking challenge, but this is not often heard, except in the height of the rut, which only lasts for a few days. The doe also utters a bleating call, like a sheep, when anxious for the buck to come to her. Both sexes also stamp with the feet when alarmed and not quite sure of the danger.

The female mule deer is very bold in defence of the young and will attack any coyote that comes near. In the case of a wolf, bear or cougar she retreats as quickly as possible as she knows her powers of resistance are useless against these animals. When brought to bay by dogs both sexes will stand on the hind legs and box with their fore legs, as other deer will do.

By the beginning of September most of the spots on the coat of the young have disappeared, and by the end of that month they are, like the adult, in winter pelage. In September and October the adults are found consorting together. Often two or even three adult bucks are found with three or four does and their young, whilst single bucks are to be observed on all occasions. By the beginning of November the necks of the bucks have much swollen and fighting commences. In the case of these species war is not a serious matter, for the antlers, being devoid of the long brow tines, that do the mischief in other species, are so formed that severe blows

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cannot be struck. The battle usually consists of the two males pushing each other about for a time until the stronger forces the other down hill and then chases him away.

The season at which the males seek the society of the females seems to vary between the beginning of October and November. The young doe at first flies from the buck and the male follows her scent like a hound on a trail. In fact, nearly all deer are alike in their habits at this season. In time the doe gives in and the male stays with her for a short time, often running after fresh charmers. Late in the season the buck may obtain a second or third wife by force of horns, but he seldom gets more than five or six. Like red and other deer the old buck often permits the association of a single one or two-year-old buck, and the liberty enjoyed by these depends much on the temper of the master buck. At any sign of danger the buck will leave the doe and in no sense protects her, either from man or wild animals. At the end of the rut the bucks are exhausted and poor in condition, but never so miserable as wapiti or red deer. Mule deer seem to feed up and get into better condition before the severity of winter comes on than other deer and they are often quite fat again before Christmas.

Only rarely do the horns of these deer become interlocked, and there are few examples in collections. When this occurs both participants in the fight are starved to death. During the winter mule deer consort together in bands which, in favourite localities, amount to big herds. In Colorado and in the Okanagan very large herds have been seen together, and Mr E. J. Duchesnay mentions ("Life Histories of Northern Animals," p. 131) having seen in the latter country as many as 400 to 500 in one day.

Their principal food consists of grass and the twigs of many deciduous trees, whilst the various tree-mosses and lichens are especially enjoyed. Like other deer they will stand up on their hind legs to reach such delicacies.

The chief enemy of this deer is, of course, man, and it is a sad fact that so beautiful a creature does not learn the meaning of the new danger that has come with high powered rifles and explosives. Some few animals have learned the lesson. The grizzly bear, the pronghorn, and the mountain sheep of the middle west, have all gathered an advancing knowledge with the improved precision of rifles, even though the two last named are verging on extinction, but the mule deer is not mentally the equal of these creatures. His curiosity and confidence are just the same as ever, and by the time civilization has spread a little further, he will have vanished from all his old haunts, except in strictly protected areas.

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The other great enemies of the mule deer are deep snow and the puma. Being a good forager, especially on trees which are not always covered, even when snow lies deep on the ground, he will stay with the rest of the band in some secluded valley, and here comes his second great enemy, the cougar. These large cats are very fond of the mule deer and will take toll of a band until not one is left. They settle down in a locality and kill at least one deer a day and often more from sheer love of slaughter.

In the deep snow the cougar can rush for a short distance far faster than any deer, so that escape is impossible in most cases. Wolves, too, hunting in bands in winter, destroy enormous numbers of mule deer, as they are able to single out and run down bucks or does with comparative ease, provided the snow is deep. Coyotes, lynxes and eagles also kill a certain number of fawns, but their depredations are not serious compared with those of man and the cougar.

Like all the other deer, even moose, this species indulges in spring gambols and will enjoy a romping chase, sometimes continued for hours. I have seen every deer I am acquainted with take part in these romps in spring. Even old stags are not above such childish amusements, just before horn shedding takes place. They dance, box and buck about as if they enjoyed the sport as much as children, and then go for long chases, winding in and out of the trees in a sort of follow-my-leader game until they are quite exhausted. Mule deer are fair swimmers, and, like the white-tail, sink low in the water, but not so low as the Japanese deer, which are so heavy that they only show the tops of their heads and noses above water. Mule deer do not make a wallow in autumn but bare places are scratched by them and are known as "scrapes." They come to salt-licks freely, and can do without water for a very long time, more so, I think, than any other deer. Mule deer live in places, in the "bad-lands" of Wyoming, where there is hardly any water in August and September, and what there is is heavily impregnated with alkali.

Every species of deer make beds in which they lie during the hot hours of the day, but these are formed as a rule quite at haphazard, just as the animal desires to rest, and whenever there chances to be a soft spot. The first of a herd, being full of food, becomes drowsy as the heat of the day increases and, after nosing about a little, drops lazily in the first place in the grass or soft moss that offers a dry and comfortable couch. Day after day a fresh lying ground is chosen and they seldom affect the same bed except by chance. The mule deer and the caribou in summer, when growing

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their horns, will, however, repair day after day to the same couch until it is worn deep into a hollow on the hillside of a sheltered wood. I have seen places not twenty yards wide which an old caribou stag has frequented regularly for a whole season. Day after day he retires to the same spot almost to the minute to ruminate and to doze, and the whole place is beaten up until the fallen wood is so soft that it makes comfortable beds. The mule deer also makes beds which soon become well worn lying spots, and day after day the animal will retire to the same place until its abode of rest is worn sometimes a foot or two deep in the dry ground.

The mule deer has a somewhat peculiar gait. It walks and trots like other deer, but when suddenly alarmed it bounds away with all four feet together, and a bouncing motion. Hence its name of "jumping deer" or "bounding black-tail." When first observed by the hunter this deer stands steadily "at gaze" and often in the shadow of a bush. Here, if the hunter continues to advance, it will keep perfectly still, trusting that it may be mistaken for some tree stump or other natural object and that the man will move on and pass by. This is a common habit of all deer and in no instance is it more regular than in the animal under notice. If the observer stops, the deer still remains rigid, but if the former again makes the smallest movement away goes the animal in "pronking" leaps for a hundred yards or so and then suddenly halts with its great ears cocked to take a final view before vanishing. This last halt is often the hunter's opportunity, and many a fine buck has paid the last penalty as the result of his curiosity. The mule deer can for a short distance attain a certain degree of speed, for after its first bouncing flight it settles down into a somewhat laboured gallop. Yet in no sense has this animal the endurance, the grace, or the woodcraft of the white-tail, which easily defeats all other deer in sinuous movement, cunning in hiding, and skill in passing through thick timber. The mule deer's favourite haunt is a sloping hillside, only moderately afforested with stunted pines and partial cover, and generally in some dry belt where grass and even sage brush is patchy. If driven into thick cover such as a white-tail loves, and can make use of, it seems to lose its head and will stand at gaze in the hope that its pursuer will pass, or it will run in narrow circles and soon return to more open ground.

Though occasionally seen on the same ground, the white-tail is the deer of the river-bottoms and willow brakes, and in these narrow limits it finds its security and its food, whilst the mule deer loves the broken

MULE DEER (*Odocoileus hemionus*)

PLATE CII.



Waldwell
1914

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"bad-lands" that fringe these bottoms or the low hills and gorges covered with patches of ash, buck brush, cedar and dwarf pine. Sometimes, especially late in the season, it is found on almost open hills, where it can see well around and use its fine eyes with as much effect as the pronghorn and the mountain sheep. Yet in parts of Montana and Wyoming mule deer do inhabit densely afforested areas high up in the timber at eleven to twelve thousand feet. I killed my first mule deer, a fine twenty pointer, just under Cloud Peak (12,000 feet), the highest mountain in the Bighorns, in timber so thick that it was scarcely possible to make one's way through the mass of windfalls and fallen pines, in fact on typical wapiti ground. In such places the mule deer lives almost entirely by browsing on lichens, etc., for grass is scarce. The forest was covered with a carpet of blueberries and the deer are said to eat both the fruit and the leaves of this as well as other low growing shrubs. In this dense timber the mule deer make well-worn paths along which they travel at dawn and sunset, either to feed or to drink, and one of the best methods of obtaining a good buck is to lie in wait within view of one of these roads on which fresh spoor and droppings are visible. I think that the majority of these deer that live high in the summer, as they do in Colorado, Wyoming and Montana, move south or west in October, as the snow is so heavy in winter that they cannot get about and are constantly exposed to the attacks of wolves and cougars, and so most of them move south or west to the lower and drier country where the hills are covered with cedars and pinyon instead of tall pines.

The White River, in North-Western Colorado, is a great mule deer resort in winter, and there is a comparatively light snowfall there, although the cold is intense. Although there are many small ranches here the deer are not much persecuted, for the close season is respected to a certain extent, and so even to-day the herds are numerous.

Mule deer like to lie in the sun in small herds. At night they feed like other deer, and at early morn and late evening, but in winter they often graze all day and keep moving about, especially in places where they are little disturbed. In heavy snow they retire to the gorges or thick timber and wait until the storm has passed. They seem to pay but little attention to wire fences and do not jump over them as red deer do but go through them after the manner of roe, making a swift turn on the side to avoid entrapping the horns. They often go under the lowest wire and seem hardly to check their speed, so swiftly is the manœuvre effected.

There is a great charm in hunting the mule deer, for it affords that ideal

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sport which allows a man to spy his game in the open and approach it against the wind in an open stalk on the hills. Mule deer hunting is splendid training for the young hunter, as it is not too difficult; and when a young fellow has mastered by himself all the details of simple still-hunting, as well as approaching the animal in open places, he will soon be able to attack, with some hope of success, the more difficult moose, pronghorn and mountain sheep. There is always the prospect, too, that if a shot is not obtained the game will be found in the same vicinity on a future occasion, so that it is best not to fire and alarm it by fluky running shots.

In former days half the mule deer were shot without any stalk being necessary. The usual procedure was to ramble along the foothills on horse-back until a good buck was seen; the animal usually either jumped, ran a short distance and stood still, or else simply stood at gaze, allowing a man to get off his horse and take a steady shot. When I first went to the Rockies, in 1886, mule deer were generally shot in this way, and although they were far from being plentiful in the Bighorns, as they had been ten years before, there were yet a sufficient number to make hunting interesting without being laborious.

My hunter, Rattlesnake Jack, and I used to wander down the pine clad valleys in the evening, watching in every direction for a buck on feed. I found two good bucks and missed them both, having a very inferior rifle at the time, and one which I did not know, having broken my own weapon.

On the third occasion we spied a grand buck, lying with five does on the edge of a "park" and close to the timber. Leaving our horses we made a big circuit round and above the game and then descended against the wind towards their position. Here we found a perfect jungle of broken sticks and fallen trees, but there were no other means of approach, so we had to crawl over every obstacle as silently as possible. Soon we could see the great ears cocked and looking down the valley, and lured by a false sense of success, we tried to get nearer, when, in an instant, the band sprang to their feet and galloped away in their bounding gait. The cover was so thick on each side that I could not manage to get a shot. Further misfortune was yet in store for me for, the same evening, on looking over a small canyon, I found myself face to face with the finest mule deer buck I have ever seen. He had heard my step on the dry ground and was standing with cocked ears in a position of intent alertness. I could only see his head and his grand horns, which were of exceptional size and covered

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with many small points. Aiming very carefully, I fired and saw the deer start and drop its head. On rushing forward I could hear it smashing through the dense timber below, where all sound soon ceased. Jack said my bullet had gone through its right ear. The next day I was luckier, and getting an easy shot at a good buck managed to kill it as it stood "at gaze." It had fair horns with the usual ten points. After a period of ill-success we moved higher up the mountains and found the mule deer frequenting dense forests, where they were very difficult either to see or shoot. One evening we surprised a small herd near timber line at 11,000 feet, and as they completely lost their heads and ran around us I was able to get an easy shot at the buck and secure it.

After many attempts to secure a really good buck Jack and I at last saw one in the timber below our camp and, creeping through the wind-falls, I got a somewhat difficult shot as it stood amongst the trees. At the report the deer vanished and I thought I had missed it, but Jack soon found blood on the trail and followed it with considerable skill. We were never very far behind the wounded animal, which kept moving in circles ahead of us, but the forest of pines was so dense that it was not possible to obtain a shot at a distance of over thirty yards, and try as hard as we would we could not drive the wounded animal into more open ground. After half an hour's following up and "jumping" the buck (whose shoulder was broken) several times we at last got very near to it, and as it was now becoming exhausted I managed to run downhill to a somewhat open place and cut it off as it hobbled into the thick cover again. Here it stood for a moment and gave me a snapshot, when I rolled it over. The head was somewhat narrow, but thick and furnished with twenty points, a somewhat unusual number, but, though a fine specimen, it did not compare favourably with the grand head I had missed during our first days of hunting. I should like to have all those chances again and to possess my good Mannlicher for the time. The mistakes of youth are always the most bitter. Yet, with all those errors, the time was a very happy one, for in after years we do not remember the moments of disappointment, but only the springtime of life in the glorious mountains, the crystal torrents and the scented wood fires. Such few successes as one had were very sweet and more highly valued than subsequent conquests over the beasts of the field when experience makes a man more skilled.

The White-tailed Deer is still, as it has always been, the most plentiful of American big game. It survives, not only because it is fairly well

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protected, but because it is for choice a dweller in dense forests and river brakes, where man finds it difficult to penetrate without making much disturbance. Moreover, by nature, it is a clever animal and only emerges from its retreat at dawn and eve, and even then retires to thick cover on the slightest alarm. A hunter who finds it easy to kill the wapiti or a mule deer is faced by a more difficult proposition when he essays the capture of an old white-tail buck.

Broadly speaking the white-tail ranges from the Atlantic to the Pacific, and from Canada to Mexico, so that it inhabits an enormous area of country, and its existence to-day is due to the fact that suitable areas for its maintenance are to be found in almost every state, whilst its power of keeping a whole skin even in close vicinity to man is such that it is not easily exterminated.

The white-tail is the same animal from Ontario to Mexico, although there is great variation in size. The largest form is found in Ontario and Quebec; a slightly smaller one in the centre of North America up to the Rockies and British Columbia; smaller again in Maine and the New England States, and again less in size in Florida, finally becoming a diminutive beast in Mexico.

Caton considered the Acapulco deer of Mexico as the smallest of the North American species, and specimens that he weighed did not exceed 30 to 40 lb. Cory states that Florida bucks weigh 80 to 90 lb. and not over 110 lb.

Mr Thompson-Seton gives the size of a northern buck from Minnesota as: Length, 6 feet 5½ inches; tail, 11½ inches; height at shoulders, 3 feet 5 inches; the weight of the carcass, cleaned, was 222 lb. The weight of northern white-tails, as taken in Ottawa Market, is said to often exceed 350 lb. A buck was killed in Vermont, in 1899, which was said to weigh 370 lb. (live weight). Another, killed in New York State, weighed 318 lb. dressed, which would give a live weight of 400 lb. Of 562 deer shipped out of the Adirondacks by an Express Company in 1895, the average dressed weight was only 109½ lb., which would mean 136¼ lb. each. Yet bucks of 300 lb. weight are certainly killed every year. The giant of the race is said to be one described in Col. Fox's Forestry Report. It was shot by Henry Ordway near Mud Lake in 1890. Live weight, 400 lb.; height at withers, 4 feet 3 inches; length of antlers, 32 inches; length from tip of nose to tip of tail, 9 feet 7 inches.

The summer pelage of the white-tailed deer is a dull rusty red or

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yellowish-brown. It is paler round the eyes and very dark on the upper side of the tail, and a black spot is found on each side of the chin. There is a band across the nose, a ring round the eyes of pure white, and white on the insides of the ears, a patch on the throat, inside each leg, on the belly and underside of the tail. In winter the red parts are all replaced by grey. The sexes are alike and the young reddish-yellow with very white spots, this coat being retained for four months.

The following local races are recognized as well as the typical species:

Odocoileus virginianus (Bodd). The typical form. Winter and summer pelage nearly alike.

O. v. borealis (Miller). Paler in colour and much larger than the above. Winter coat coarser and greyer than summer.

O. v. macrourus (Raf). Paler than the first named.

O. v. leucurus (Douglas). With little black and more white.

O. v. texanus (Mearns). Smaller and paler than the type.

O. v. osceola (Bangs). Same as *texanus* but very dark.

O. v. louisianæ (Allen). Like the typical race but paler and with a slender skull.

There is little distinction between most of the above beyond tint and size, and even then the differences are so small that sportsmen fail to take notice of them. From Canada to Mexico it is just a white-tail, and scientists will probably never alter common parlance.

Thomas Hariot, an English mathematician in the service of Sir Walter Raleigh, when he visited Virginia in 1584, seems to have been the first white man to describe this animal. "They differ," he says, "from ours only in this, their tails are longer, and the snags of their horns look backwards." Hence we get the name of "Virginian deer," still commonly used. The French Canadians speak of it as "*Chevreuril*" or "*Le Dain fauve à queue blanche*." The Cree and Ojibway name is "*Wab-ai-ush*," and the Sioux call it "*Tah-heen-chá-lah*."

Taken as a whole, the white-tail had, twenty-five years ago, disappeared from much of its old habitat in Eastern North America, but owing to protection it has now regained a proportion of its former territory. In 1890 there were very few white-tail left in New York State, but to-day the species is spreading rapidly, even close to New York itself. It is also increasing fast in Manitoba, Minnesota, British Columbia and Alberta. Formerly it was very abundant in Wyoming, but must now be considered almost a rare animal.

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Audubon considered that the white-tail was a very local animal and generally found in the same range, and that it can usually be put up "often not fifty yards from the place where it was started before." All observers nowadays agree that it is very local in its movements and that where conditions are suitable it occupies a very limited range and may be said to be strictly non-migratory.

The white-tail loves to lie up for the greater part of the day in the densest cover and to emerge in the evening and feed in open glades or along the grassy banks of some willow swamp. With its skulking habits, excellent sight and hearing, and quickness in taking cover, it is rather a matter of surprise that the white-tail should have ever become scarce in its old western ranges, for even to-day these long river bottoms are seldom invaded by man. White-tails seem also to court the society of man and do not move from the vicinity of ranches, nor are they scared by the woodman's axe or the presence of cattle. Wolves, and cougars, too, such fierce and unrelenting enemies of the mule deer, seldom molest them. It is therefore a little strange that their chief enemy, the man with the rifle, should have caused such destruction amongst them in the lone brakes of the Far West, whilst the species is able to hold its own so well in the more open forests of Quebec and Ontario, where hunters, both red and white, outnumber those in the west by ten to one. But taken as a whole, the white-tail is still fairly plentiful, and long may we hope it will continue so, for no other animal is capable of teaching young America to shoot like this one. In 1895 the official return of white-tails killed in the Adirondacks alone was 4,900 and to this may be added at least 2,000 illegally killed both in and out of the proper season. Mr Thompson-Seton put the numbers there at the present day at 30,000, or three to the square mile. In 1899, 7,579 deer were killed in Maine, and the same author estimates the numbers there in 1906 as not less than 75,000, or about two to the square mile, whilst Dr Hornaday thinks that there are 100,000, or three to the square mile. In Ontario and Quebec they are not so abundant as this, and all competent observers agree that the animal is not nearly so numerous in any of its ranges as it used to be. Morton, writing of the deer in New England in 1632, says, "There is such abundance that 100 have been found, at the spring of the year, within the compass of a mile." Immense numbers were to be found in Texas until 1860, and it is said that old hunters often met with bands of 500 together, and that thousands could be seen in one day; and there is little doubt that in former times the numbers of white-tail reached a total of several

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millions. The white-tail has practically vanished from its old homes in Ohio, Indiana, Illinois, Iowa, Nebraska, Kansas, Kentucky, the western parts of Missouri, and the southern parts of Minnesota, Wisconsin, Michigan and New York; but is still abundant in Northern New York, Quebec, Ontario, Northern Texas, Northern New England, Maine, Northern Michigan and the drier part of Florida. It is not very plentiful in New Brunswick, though a hunter is generally able to get his two deer by working for them.

The horns of the white-tail, when normal, at first rise up and outwards, and then bend forward, so that the main beam is a continuous one and not forked as in the mule deer. There is a large sub-basal snag, generally much larger than that of the mule deer and often forked at its extremity. On the upper surface of the main beam are usually three to six long points. In nearly all well developed heads the horns are abnormal and there is much palmation in the centre of the main beam, and many supernumerary points are added both on the side and below the main beam and on the long points themselves, so that the whole head may, in exceptional cases, become a perfect forest of small excrescences and points.

It is almost common to see fine white-tail heads with snags developed all round the base of the horn, whilst in some the "dropped" bifurcation depending from the middle of the beam, and itself again furnished with other small points, is not rare. In fact, it is not too much to say that in all big heads there is a paradoxical regularity of irregularity. Perhaps the most remarkable head ever killed is the seventy-eight pointer in the possession of Mr Albert Friedrich, of San Antonio, Texas, of which he sends me a photograph. This is the largest number of points ever seen on any deer head, though I have possessed a sambur head of seventy points and have a photo of a caribou head of seventy points.

The example in question was killed in Texas many years ago, but particulars are wanting. It is a perfect little tree of points and snags and has several large "dropped" bifurcations all furnished with additional points. It is also a very large head. Another head of remarkable growth is the forty-two pointer, killed many years ago in the Adirondacks, which was until recently in the possession of Major Frewan. I do not know its present owner. Though small it is also a little tree of horn and almost unique in its character.

The photograph of a remarkable white-tail head with thirty-five points, killed in Minnesota, is given in "Recreation," June, 1897. Horns

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over 25 inches in length are rare and Ward gives the maximum as 29 inches. One of the finest white-tail heads I have seen was killed in British Columbia, where good examples are extremely rare, and another superb example from the Mississippi Valley is one of the best heads in the Natural History Museum at Berlin. I made a sketch of it whilst three policemen stood around and eyed me with suspicion. Sometimes bucks are found without antlers, and there are in the case of this species several instances of females growing small horns. As in the case of the mule deer, the form of the horns is such that the fighting male is able to do little or no damage to his adversary. When two males battle and the shape of the horns of one is slightly less than that of his opponent the antlers sometimes become interlocked and both animals die of starvation. These instances are more common in the cases of white-tailed deer than other species. Audubon and Bachman relate an instance where the horns of three bucks became interlocked. There are two instances in Germany of red deer having been fixed in the tree whilst cleaning their antlers, and the tree has continued to grow holding the horns and skull until they were found thus amalgamated. In the New York State Museum is exhibited a portion of a tree with the antler of a white-tail driven through or fixed in it.

The hearing and powers of scent of the white-tail are wonderfully acute. Whilst their powers of seeing, that is, of recognizing shapes and forms, is not remarkable, Audubon and Bachman go so far as to say it is very imperfect. "We have often, when standing still," they say, "perceived the deer passing within a few yards without observing us, but we have often noticed the affrighted start when we moved our position or when they scented us by the wind." As a matter of fact, this is the case not only with deer but nearly all wild animals. If a man stands perfectly still, especially if motionless besides a tree or rock, almost any wild beast will pass by if he does not move. The beast gazes steadily at you, but seems to fail to recognize the form unless it moves. I have often been passed by hinds and stags in a Scottish deer forest, even where the deer were very wild, within a space of five yards, and the animals have stared at me and then walked quietly away. I have even twitched my head or hand and seen a corresponding start on the part of the beast. It saw the movement out of the corner of its eye, but still failed to place the object as a living man, and if no further movement was made it would proceed on its way without alarm. But let a man move his whole body, even ever so slowly, and the wild animal starts,



Photo by]

MULE DEER. Wyoming, 1886.

[J. Hicks.

Shot by Mr J. G. Millais.

PLATE CIII.

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and is off at once. I once photographed a big caribou bull lying dozing on an open hillside, at a distance of four paces. It took me over an hour to do that last hundred yards of the stalk, so slowly did I creep amongst the rocks and bilberry bushes, but I succeeded by simply moving like a snail as the animal dozed in the sun. The last twenty yards of the stalk was by far the most difficult, because the deer clearly heard the buttons on my waistcoat scraping on the bilberry stems; at each scrape it gave a start, yet it never rose from its position. You can do a good deal with a wild animal if it is not quite sure, and the bull never rose to its feet until I actually clicked the shutter. Then it gave an immense bound out of its couch and raced away as if the devil and all his satellites were in pursuit.

When the white-tail is grazing it nearly always shakes its tail before raising its head, so that if the hunter is so fortunate as to find one in an open place he may be able to advance upon and note its movements of watchfulness by its habits.

No pronghorn or mountain sheep will permit the liberties that may be taken with deer. Their eyesight is too keen and too sure to make mistakes, and for this reason they are at once in a higher category as beasts of the chase, from the hunter's point of view.

The white-tail is a very silent deer. The female makes a soft murmuring sound when calling her calf, and if in pain bleats like the calf. The buck when alarmed utters a loud snort, and at night is said to utter a shrill whistle like the chamois of Europe and the various reedbucks of Africa. Audubon says it can be heard at the distance of half a mile. Like nearly all deer, when captured alive they make a loud bawling cry. When chased by hounds they are usually silent, but many good observers have heard white-tails utter a bleating sound when hunted.

Great numbers of white-tails were, until recently, killed by means of the jack-light and the shot gun, but now this poaching method is seldom used, as it is both illegal and detested by all true sportsmen. The usual method of killing was for the poacher to paddle his canoe, in the bow of which a bright jack-light was fixed, along the shores of a lake or river and to find the deer on feed at night. Deer, when they view the light, are not alarmed, but only curious, and come close to inspect the phenomenon and offer an easy target to the shooter.

Of course, the chief enemy of the white-tail is man with a repeating Winchester or Savage, but in the west wolves and cougars take no small

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toll of the herds when deep snow has fallen. On this they can run more easily than the deer, and the latter, being so very local in their habits, never seek to change their habitat even after the greater number of a band have been killed.

Some backwoodsmen are of opinion that wolves seldom hunt the white-tail for any distance. Either the latter is overtaken at once or it reaches water or some open road or clearing where its pursuers will not follow. But this probably applies only to swampy regions, for in Quebec and Ontario there is little doubt that packs of wolves follow the white-tail, as they do the mule deer in the west, and run into it after a long chase. To give some idea of the destruction effected by a few wolves, Mr Thompson-Seton says ("Life Histories of Northern Animals," p. 89): "The Hon. George H. Shiras tells me that in the spring of 1906 he examined carefully a cedar swamp in Alger County, Northern Michigan, and found within a radius of three miles 325 carcasses of deer killed by wolves during the past winter." No doubt both wolves, lynxes and foxes killed a certain number of fawns, and whilst all females will run from a wolf that threatens their calves, they will boldly attack a fox or coyote and put it to flight. Great numbers of white-tails often die of epizootic distemper and parasitic disease of the lungs and stomach.

The usual gait of the white-tail is an easy bounding gallop. In thick cover this is varied by beautiful leaps over fallen timber. Some of its jumps are surprising in their length, and one that I measured from the take-off to the landing over a four-foot log was 21 feet. At each high bound the tail moves upwards and looks like a white flag being raised. In the open this deer also jumps high into the air, as if intending to see the object of disturbance and to gain a better view of its surroundings.

It is a beautiful sight to watch a white-tail retreat in a maze of windfalls. It knows exactly how and where to jump or pass beneath a fallen tree, and in and out it threads its way with a coolness and deliberation that shows the perfect master of woodcraft. Again and again you see it arrive at some obstacle that you think must stop it and thus offer you a quiet shot, but it is never at a loss, nor does it stop without covering its body in such a way that no successful shot can be made except at the head. Most of the deer spring, run a bit, and then halt and look back, apparently careless whether their bodies are hidden or not. Not so the white-tail in timber; it lures you into the belief that it will give an open shot, but always just

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manages to pass round a tree or bush ere it halts. If a shot is fired and does not strike the animal it seldom gives a second chance. When hit the white-tail drops its head and runs slowly through the cover, twisting to and fro to throw its pursuer off the track.

White-tailed deer are fine swimmers and can travel so fast in the water that it takes a good man in a canoe to catch them. In fact, so confident are they of their swimming powers that they almost invariably make for some river or lake when hunted by hounds, and there are many instances on record of deer taking to the open sea, when they trust to luck to find another landing place. In "Forest and Stream" there is a record of a white-tail captured near Portland, Maine, five miles from the shore, and another was taken at a mile and a half from shore, swimming away from the land. Deer swim higher in the autumn when they are fat than in summer.

The white-tail buck is said to wallow to a certain extent in the autumn, but does not smear itself all over with mud and bog as red deer, moose, and wapiti do.

In the winter the herd keeps together but in the spring the sexes separate, often two males keeping together throughout the summer. The females also keep in small herds with the young of the previous year until May, when they go off alone to seek some quiet spot in which to hide the calf. The female does not produce young as a rule until she is two years old, but there are instances in which one-year-old females have had calves. The usual number born is two, but three are known at a birth, whilst Audubon relates an instance of a female about to bear four well developed fawns.

The larger deer hide their young only for a few days and the antelope for a week, but the white-tail female conceals her young in cover for a month or more. Fawns begin to follow the mother in four to five weeks and then develop rapidly. They feed in the half light on tender grasses and retire and live in hiding for the greater part of the day.

As a rule the buck sheds its antlers in January, but, as with other deer, the date depends much on the condition and age of the animal. The new horns do not appear at once, for it takes the animal some time to get into condition after the rigours of winter; but once the grasses begin to spring in March the horns grow quickly, at the usual rate of antlers, and are generally complete about the middle of August and then rubbed clean of the velvet. During the summer white-tail bucks are fond of frequenting the

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margins of ponds, lakes and rivers, and to avoid the persecution of mosquitoes and ticks will, in hot weather, lie immersed in the water with only the nose and part of the head projecting. In September the buck gets into good condition, and lays in a great amount of fat in October when the acorns begin to fall. In fact, acorns are the favourite food of this deer in the autumn, and it is interesting to note that east of the Rockies the range of the white-tail coincides with the distribution of the oak tree.

When in good condition the necks of the bucks swell as early as October 10, and they begin to chase the does. It seems, however, that the season of mating on the part of the does is not so early, for the bucks give chase some time before the does are ready to accept them. The male follows the track of the doe with his nose on the ground, and often a long and spirited race takes place before he comes up to her. Sometimes two or more bucks take up the chase of a single doe, and the practice of pursuit is so well known to hunters that advantage is often taken of the male by watching for his appearance when a doe is seen running at full speed with her tail down. During the rutting season the buck does occasionally utter a curious bleat, whilst some hunters describe it as being like the noise made by two trees creaking together.

The usual circumference of a buck's neck is about 20 inches, but in November it swells another 10 inches or more so that it has a much inflated appearance.

Merriam ("Mamm. Adir.," 1884, p. 117) says: "The bucks not only fight amongst themselves, but occasionally attack man, and more than one unfortunate person has been gored to death by them. In battle they make use of their horns, and also of their fore-feet, whose sharp hoofs are capable of inflicting terrible wounds. I was once sitting quietly on a log in a deer park when a buck approached, and, making a sudden spring, dealt me such a powerful blow on the head, with the hoofs of his fore-feet, as to render me unconscious." Luckily a man was near and intervened with a club. This instance, however, refers to a semi-tame buck in a park, where deer are always liable to become savage, but there are many cases of wounded bucks attacking men, who have only saved their lives by feigning death.

The best white-tail buck I have shot was killed in a very curious manner, and the circumstance is so strange that I must relate it.

Early in November, 1902, after an unsuccessful hunt after moose in

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the Kippewa district of Ontario, I entered the Deux-Rivières county of Quebec north of the Ottawa to have a final try to get a good bull before the winter drove me out. I was accompanied by a drunken Indian who knew where the moose were but who was otherwise useless. On the second day north of the river we tramped along an old lumber road and came to a small lake amid dense forest. It was snowing hard and, as I was somewhat tired from carrying a pack, I told the Indian to light a fire whilst I went to the lake edge to fill the kettle with water. In my right hand I carried the kettle and in my left my rifle and as I stooped to fill the former I looked across the lake and saw a splendid white-tail buck standing on the farther shore intently watching me. I lay down at once, but as the snow was falling so thickly I found it very difficult to estimate the distance, which may have been anything between 200 and 350 yards. However, as I looked down the sights of the rifle the buck seemed to have vanished. I could hardly have failed to see it leap into the cover and so, for a moment, was at a loss to account for its sudden disappearance. In a moment, however, the mystery was explained. The buck was in the middle of the lake, and, more curious still, swimming directly towards me. In the black water I could only distinguish the nose and horns, which stood up like some floating tree. On and on it came and I lay perfectly still until I could see the black eye and moving nostrils. Even at a distance of 20 yards the buck only diverged slightly from its line and was in the act of landing, not 10 yards from me, when I put a bullet through its ribs. It gave a convulsive plunge or two and fell dead.

I can only explain the curious behaviour of this buck by supposing that, owing to the falling snow, it was unable to identify my form and so took me for a rival or a doe, and, in spite of its fine eyesight, it must still have been labouring under that delusion up to the moment when I shot it. The surprise of the Indian was complete when he found me standing over the deer, as there was no cover near the spot and he could not understand how the incident had happened. The buck carried very good horns, 27 inches in length, with fifteen points.

The first buck I shot in the Rockies was scared out of a willow brake and ran almost on the top of me before it discovered its mistake, whilst a second gave me an excellent stalk in the early morning. The buck during the rut usually has one doe, sometimes two, and rarely more than three. Like other deer he seeks fresh charmers as soon as the first doe becomes unresponsive, and the mating season is thus sometimes prolonged for two

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months. It is not till mid-December, when all strife and jealousies are at an end, that the herd comes together and so remains in the deep-lying snow till the warmth of spring again extends their range and life begins over again. As one writer has said: "The hunter makes the highest type of soldier, and the white-tail makes the highest type of hunter." Long therefore may this beautiful deer flourish in America, not only to charm the landscape with its graceful form but to teach young America how to use the rifle.

THE MOUNTAIN SHEEP

FOR a long while naturalists only knew one sheep in North America, namely, the Bighorn (*Ovis canadensis*), but in 1884 Nelson described the white bighorn as *Ovis montana dalli*. This, in 1897, was considered a species by both Allen and Merriam (*O. dalli*), and numerous travellers, naturalists and hunters, having killed or obtained in Alaska and British Columbia specimens of all colours intermediate between the typical race and its northern white form, have come to accept such partly coloured varieties as *O. c. stonei*, *O. c. fannini*, *O. c. liardensis*, etc. In the same way all the paler forms of the south inhabiting Mexico, California, Nevada, South Dakota, etc., have been honoured with specific names by Dr Merriam and other naturalists.

Any broadminded observer, however, must see that all the sheep are one and the same animal, only varying in colour according to their geographical distribution. Those of the north become whiter as they are found in a severer climate, blacker in the mountains of Central British Columbia, and sandier in varying degree as the species approaches or reaches the sandy coloured and sun-parched hills of the south.

On the other hand, there are those who, for the sake of explanation in local races, prefer to have them called by some Latin appellation which will be a means of identification for each separate group, and with them we must not disagree because their claims are just. It is only when these local races are referred to as species, as is constantly the case with American naturalists, that we must assert our protest.

In no group of American animals, except the caribou, has the confusion of local races been so complete as amongst the sheep, and this is due for the most part to the fact that where each separate group of brown, black, sandy, or white sheep exists, members of the allied races that touch them on one or other side, will be found running amongst them.*

Those who wish to recognize the various sub-specific races of the bighorn in North America will perhaps be satisfied with the following table:

BIGHORN OR ROCKY MOUNTAIN SHEEP

1. Rocky Mountain Sheep, *Ovis canadensis* (Shaw).

Range: South and Central British Columbia, Wyoming, Montana to Arizona.

*The name *Canadensis* probably antedates the name *Cervina* of Desmarest.

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Colour, greyish brown, darkest on the back; under parts, inner sides of legs, upper throat and patch on rump and round base of tail, white; somewhat lighter in colour in winter; length, 4 feet 6 inches; height at shoulder, 3 feet 4 inches; length round curve of horn seldom exceeding 40 inches and reaching $44\frac{1}{2}$ inches, and from 14 to 17 inches round the base.

2. Audubon's Sheep, *Ovis canadensis auduboni* (Merriam).

Range: The "bad-lands," Western South Dakota and Eastern Wyoming. Said to possess slightly different cranial characters from the typical race.

3. Nelson's Sheep, *Ovis canadensis nelsoni* (Merriam).

Range: Grapevine Mountains, between California and Nevada.

Similar to the above but much paler.

4. Mexican Sheep, *Ovis canadensis mexicanus* (Merriam).

Range: North-Western Mexico and probably Southern New Mexico.

Intermediate in colour between the mountain and Nelson's sheep, but with ears longer than the first named.

5. Dall's Sheep, *Ovis canadensis dalli* (Nelson).

Range: Alaskan Mountains north of 60° to the Arctic coast and as far east as the west side of the Mackenzie.

White or yellowish-white at all seasons.

6. Fannin's Sheep, *Ovis canadensis fannini* (Hornaday).

Very close to Dall's sheep and blending into that race. Shoulders, back and upper parts of legs, grey.

Range: From Central to South Alaska as far as Atlin.

7. Stone's Sheep, *Ovis canadensis stonei* (Allen).

Range: Peace and Liard River Mountains, Cassiar north to Atlin, Alaska, south into British Columbia, where it merges into the black sheep.

Much darker than the typical race, but often with whitish or pale grey head and neck. Horns more slender and pointed at the tips.

8. The Black Sheep, *Ovis canadensis niger*.

Range: Mountains at the head of the Skeena River.

Very dark brown or nearly smoky black all over, with small rump disc. The darkest of all local races. Only one or two specimens of this race have been killed.

9. The Samilkameen Sheep, *Ovis canadensis samilkameenensis* (sub-spec. nov.).

Range: The Samilkameen Mountains of British Columbia. The smallest of all American local races, and now extinct.



ROCKY MOUNTAIN SHEEP (*Ovis montanus*).

Said to be the largest known example.

Length $52\frac{1}{2}$ inches: Circumference $18\frac{1}{2}$ inches.

In the possession of Mr W. F. Sheard.

PLATE CIV.

THE MOUNTAIN SHEEP

Colour, dark brown all over, with small white rump patch and horns small. These sheep were evidently a dwarf race closely allied to No. 8, and in appearance and size bear little affinity to the sheep of East Kootenay and Lillooet, which are of the typical race.

Mr Charles Sheldon has probably made a more comprehensive study of the North American sheep than any other traveller and naturalist. He has made many expeditions to Alaska and British Columbia for the purpose of determining the local areas occupied by each of the various races, and has found that whilst certain mountain ranges are occupied by the admitted sub-species, these same areas are also inhabited by sometimes three, four and five of the other intermediate grades of colour. For instance, the area touching the Glenlyon Mountains on the north, the high branches of the Liard on the east, Cassiar on the south and Atlin on the west, is occupied by five distinct types of sheep, all intergrading between nearly true *dalli* and darkest forms of *fannini*. To this number I can add true *stonei*, for I saw two rams that were killed on the Tanzilla, a river to the north-west of Dease Lake, and within the said area, which in no way differ from those shot the same year in the Iskoot Mountains, south of the Stickine, which is the admitted area of *stonei*. Moreover, my friend, Lieutenant Dalgleish, who hunted one winter in Atlin and killed a record head there, tells me he saw two or three sheep which were "pure white all over" (except black tail) and this would mean that true *dalli* also inhabit the same area. This means that all these northern sheep can be found in one small area of, roughly, 300 by 300 miles, and that it is therefore practically impossible to separate them, since all nine types figured by Mr Sheldon ("The Wilderness of the Upper Yukon," p. 299) overlap and interbreed, and must therefore be considered as one and the same animal, governed in colour by local conditions and climate.

Mr Sheldon's conclusions are more worth studying than those of naturalists who have described individual sheep, gathered at haphazard from widely different areas. He says (*id.*, p. 299):

"The habits of all sheep on this continent, existing north of the range of the Rocky Mountain sheep, *Ovis canadensis*, are the same except so far as they are slightly varied by local topographic and food conditions and by the accumulation of snow on their ranges during the winter. The environment and the climatic conditions where they live are practically the same, their natural enemies are the same, and

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they select and eat the same food. All dwell above timber-line and by nature are timid and wild.

“ Their body measurements, according to age and sex, allowing for slight individual variations in size, are practically the same.”

He then discusses the divergent or close curl of the horns in the various races, and proves that the divergent type which was originally given as a definite character in *O. c. stonei* has no substance in fact, for in this sheep narrow curled horns are just as common as divergent ones, and this I can corroborate from an examination of over fifty examples. On the Pelly River the divergent type is rare but certainly exists, whilst it is common in the same sheep from the Pelly, Stewart and Ogilvy Mountains. “ What is true of the comparative divergence of the horns,” says Mr Sheldon (*id.*, p. 300), “ is equally true of their comparative length, circumference and shape.”

He also considers that in the case of these “ weak sub-species ” the “ differences of skull characters are slight,” if, in fact, they exist at all.

Broadly speaking, therefore, all the sheep of Alaska are uniformly white except occasional specimens between the Yukon and Tanana Rivers, while a few tinted ones are found at the head of the Stewart and Macmillan Rivers and in Southern Alaska. They extend south of Atlin, on the west, and east to the Nahanni River (a northern branch of the Liard); northwards they go to the Arctic coast, where mountains are found between the north of the Mackenzie and Point Barrow. South of the Stickine the sheep are all dark, with occasional specimens having whitish faces and necks; and further to the south, about the Skeena Mountains, they are darkest of all.

The general distribution of the true bighorns is Western and North-Western America. They are found throughout the whole range of the Rocky Mountains both on the eastern and western slopes. They occur in all the smaller mountains from British Columbia to Southern California and southwards as already detailed. Allied races also occur in the eastern hemisphere, the Kamchatka bighorn being very closely related to the American races. The bighorn is found as far south as Northern Mexico, where the race is small and pale in colour.

By far the finest examples of the typical race were found in Colorado, where they are now verging on extinction, in South and Central Wyoming, Northern Montana and Alberta. To-day they are probably more numerous and finer in the roughest mountains of Alberta, taking Banff as a centre,

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than any other part of the main range of the Rockies; and the sportsman who wishes to secure a couple of first-class heads has still a good chance of doing so in this area, despite the constant hunting of the Blackfeet and other Indians, who, as a rule, are allowed to do as they like at all seasons.

There are still a good few fine sheep up in the mountains about Fort George, but they are not numerous and the country is very difficult. I have seen some grand heads over 40 inches, with 16 inches round the base, recently killed there. There are also a few very fine rams to be found in the mountains of East Kootenay, and Mr Williams, the popular game warden of British Columbia, recently killed a beauty there. I have seen two heads of 44 inches, but that recently belonging to Mr Sheard, of Tacoma, measuring 45 inches, is not above suspicion.

Generally speaking, the bighorn is regarded as inhabiting inaccessible and precipitous cliffs, which gives the impression that its mode of life is more or less similar to that of the mountain goat, the ibex and the chamois. Mountain sheep certainly do retire to inaccessible cliffs when much hunted, but on the whole the idea that it consistently frequents such places is a mistaken one. Most of the sheep that I have seen were found on sloping plateaux above, or just touching, the timber-line, and in no sense on bad ground. In the Lillooet country photographs of these animals show them on easy, rolling uplands where any delicate lady could walk. Their usual haunts are the grass-covered slopes of high mountains just above timber-line and below the edge of perpetual snow fields. In spring and autumn they are usually found picking about amongst the rocks where grass and moss are plentiful. In the winter they seek lower altitudes and frequent glades in the pine woods, often going into the timber itself. Even when the snow comes, sheep do not come down, but paw away the snow after the manner of caribou until they reach the bunch grass.

In the "bad-lands," where they live at low levels, they keep to the terraces during the day, and often descend to the prairie itself to feed in the morning and evening, and here their food consists of three varieties of the sage plant as well as grass, and they do not seem to feed at night as deer do. All races of wild sheep are extremely local in their movements if undisturbed, and that is why they are amongst the first animals to become extinct in any locality. They are nearly always found in the same range of hills, and will always return to their favourite haunts in spite of continuous shooting. They may be driven away for a short time, but come back again. They seem to have no migratory instinct.

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In spite of their extraordinary powers of observation wild sheep cannot maintain their strongholds against man armed with the modern rifle. Mountain sheep are very gregarious and are met with in flocks of from five to fifty individuals. During the rutting season even larger gatherings—up to 200—have been found together, and Indians from the Liard have told me that they have seen enormous flocks of white sheep in the autumn, so that the hills seemed to be covered with them. The Indians themselves seldom hunt them, because moose and caribou are plentiful and more desirable for skins and meat, and the white man seldom penetrates these remote mountains. In times of security the flock is usually led by an old ram; but when danger threatens he covers the rear-guard and allows an old ewe to lead the flock. During the early autumn the sexes are generally found at different elevations and sometimes on adjoining ranges. One may find hundreds of ewes and kids and not a ram is to be seen. These wary old fellows are hidden away in remote corries full of shifting winds, and do not join the main flocks until November, when the snowfall is considerable and the mountains are difficult to pass. About the second week in November the old rams begin to fight, and the crack of their horns as they meet can be heard a long way off. The victor of these fights collects as many ewes as he can, usually from six to a dozen, whilst the beaten males wander about alone in search of other rams not so powerful as themselves. The yearling and two-year-old rams remain on sufferance with the ewes, that is to say, it depends much on the temper of the master-ram whether he will permit these hangers-on or not. Sometimes the two-year-olds are chased away and at other times the master pays little attention to them. After the rutting season, sheep of all ages herd together again to pass the winter, and remain together until May, when the females wander off singly to bring forth their lambs. The males of all deer leave the herd as a rule in March, and keep together until horn-growing has properly commenced, when two stags, usually an old male and a young one, go off together to pass the summer in retreat. The rams of the mountain sheep do not as a rule leave the herds till May, and then form flocks of from five to twenty, and thus keep together in the most inaccessible places on the edge of the snow-line until the autumn. The mountain ewe conceals her kid amongst vegetation for the first three or four days, when it comes out of its hiding place and joins the mother. She in turn rejoins the main flock about a week later, and the young are then quite capable of looking after themselves.



STONE'S BIGHORN (*Ovis canadensis stonei*).

Length on front curve 44 inches: Circumference 14 inches: Tip to tip 25 inches.

Shot by Col. Max. C. Fleischmann.



FANNIN'S BIGHORN (*Ovis canadensis fannini*).

Length on front curve $39\frac{1}{2}$ and $40\frac{1}{2}$ inches: Circumference $16\frac{1}{2}$ inches: Tip to tip 25 inches.

PLATE CV.

THE MOUNTAIN SHEEP

Owing to the structure of their feet, the exterior and interior line of each hoof being perfectly straight, with the toes bevelled on the inside, mountain sheep are able to maintain a footing in places where man is unable to follow. The hoof catches the rock like a blade of shears and so they are able to stand and run in places where even a deer could find no foothold. It is a wonderful sight to see a flock of wild sheep pass along the side of a cliff with apparently nothing to hold on by, and there is no visible trail. You see them come to a perpendicular wall and think that now they must be stopped. The old leading ewe only lowers her head, hesitates a moment and takes a leap on to some slight excrescence which the human eye cannot detect, and again bounds off it to another small projection until she finds a way. No yawning chasm or dizzy precipice daunts her, because she knows, by frequent excursions along their innumerable trails, that there is a way. Each member of the flock seems to accept her leadership without question and to imitate her movements, so that they all travel over the very worst places as if actuated by one impulse. Of course, they do make mistakes sometimes. I know of one case where the skeletons and skulls of ten rams, all over 40 inches, were found lying together beneath a precipice in Montana. These probably met their death through some mistake on the part of the leader, but, on the other hand, they may have been swept off their feet by an avalanche. Four of these heads now find their resting place in the museum of a friend of mine in Sussex, and they are noble examples of old-time rams.

It is a well-known fact that these highly-intelligent animals do sometimes get themselves into impossible situations from which they cannot retreat, and more than one hunter has cornered them in some hopeless blind alley and been able to pick his heads; but such occurrences are distinctly rare; and the man who expects to secure a head except after severe toil will generally be disappointed. The bighorn possesses a powerful scent, though not perhaps so strong as that of wapiti; but if they are in numbers and the wind favourable it is not difficult to detect the warm sheep smell. Horses and dogs are quickly aware of their presence.

Whilst on the subject of dogs, it may be noted that a hound with good feet may be used with great effect in sheep hunting, provided that the country is not too rocky. One hunter I know of in the Lillooet region for years used a pair of collies and killed a great number of rams with them. His methods were simple. If the ram was in a position favourable for a stalk, he stalked it, but if he missed it, or the country was open and the sheep

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had taken alarm, at some distance where it could still be seen, he loosed the dogs. These, in the course of a mile or two, generally brought the ram to bay. This, perhaps, was not very sportsmanlike, but certainly effective.

In old days, in Wyoming, when mountain sheep frequented isolated buttes on the prairies, they often left these to feed or to travel to the "bad-lands," and in such situations they were often chased by the cowboys, who, however, seldom succeeded in roping them. It is interesting to note that on such occasions the old rams were said to far outstrip the ewes. They seem to gallop about as fast as a deer at a level easy pace, but are not nearly so swift as the pronghorn.

The head of a bighorn ram is perhaps the most highly-prized trophy in North America. In its old range east of the Rockies the species is now becoming scarce, and, owing to constant harassment, it is perhaps more wideawake than any other American animal—with the possible exception of the pronghorn. Accordingly, the man who can add a couple of 40-inch heads to his collection by fair hunting may be considered a real hunter; because the possession of those trophies generally means that he has toiled with patience for weeks, and sometimes months, over some of the worst ground in the world before he gained his prizes. In Alberta and East Kootenay sheep hunting still involves equal difficulties, but in the Lillooet region almost any hunter of moderate skill can obtain a couple of good rams without much labour. Broadly speaking, it is true that the further north we go the tamer wild animals become. The severities of winter seem to have a crushing effect on the nature of both man and animals, and to make them more confiding and less nervous as to their fate. Winter in the north lands has, as it were, a terrorizing effect, which in a measure dominates all other considerations. Man and the wild animals find they have to give in before it. It is too strong for them, and the terror of its threat seems, even in the brief summer, to be always with them. The sheep in these icy lands know that they have to come down, and that the area of their feeding grounds is a very limited one. Accordingly they are the more loath to leave it than are their southern cousins. Also the times when they are attacked are much rarer, and this again lulls them into a false security.

Wherefore the hunter who goes to shoot Stone's sheep in the Iskoot Mountains of British Columbia will not find them anything like as wild as the sheep of East Kootenay or Alberta. The sheep of Northern Cassiar, Atlin, and the Liard are tamer still; whilst, in unfrequented parts of

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Alaska, I have heard men say that the white sheep were as tame as caribou, and that is saying a good deal. In making this comparison, I am well aware of the fact that in certain parts of Alaska, where sheep have been hunted, though only spasmodically, by both white and red men, they are by no means easy to kill. We have only to read the best book on sheep, namely, "The Wilderness of the Upper Yukon," by Charles Sheldon, to realize how hard he must have worked to have obtained some of his fine trophies. It does not do to dogmatize and assert that because sheep happen to be tame in one place they will be so in another. All sorts of local conditions, with regard to winds, food supply and the shape of the mountains themselves, have to be taken into consideration; and I merely wish to speak in a broad sense when I say that all animals become easier to capture as we approach the Arctic regions.

It is interesting to watch a herd of wild sheep in their natural home. There seems to be no specially appointed sentry, though one and all will at times carefully survey the landscape both up and down hill. Deer seldom look up hill unless they hear something, but sheep and goats and one or two of the African antelopes, such as Chanler's reedbuck and the klip-springer, will watch as much above them as below. This, of course, makes the stalking of them far more difficult from the hunter's point of view. On observing a flock of wild northern sheep almost the first thing that strikes the observer is the rich amber tint of the horns of the rams. In winter these are almost a warm yellow brown and have a certain transparent appearance. Whilst constantly on the alert, sheep have a very definite reasoning power in judging sounds and their causes. Rock or snow falls, however loud, are regarded with indifference, but let the hunter dislodge even a pebble or two, flush a ptarmigan or carelessly crunch the small stones beneath the feet, and the flock are on the alert at once and will probably run. Mr Sheldon ("The Wilderness of the Upper Yukon," p. 238) well illustrates this in describing a stalk.

"While I was watching them, well concealed behind some low rocks, a large mass of rock broke away from the top of the mountain behind them, and thundering down the slope, landed about fifty yards to their right. During the crashing descent I observed them closely. They remained absolutely indifferent to the small avalanche, only one of them turning his head in that direction. Three single rocks fell at later intervals, but they took no notice of them. After awhile, in seeking a different position so that I could better hold my glasses,

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I dislodged a small stone, not three inches in diameter, which went rolling down the slope. Up to that time I could not see that any of the rams had suspected my presence, except the three small ones above, two of which were then lying down. These small rams evidently trusted the larger ones, and even after having seen me approach, they were indifferently awaiting some warning of alarm from the leaders below. At the sound of that small rock, the whole band jumped up at once and started to walk up the slope. It was perfectly calm, and I could feel no currents of air. The rams were suspicious and I knew that in a moment they would see me."

I have seen wild reindeer in Norway do exactly the same thing. Here centuries of hunting have endowed the perceptive faculties of these animals with an acuteness only equalled by wild sheep. Of snow or rocks falling they took no notice, but if the hunter dislodged a pebble or disturbed a bird of any kind, they never stopped to reason, but galloped away at once.

When undisturbed, sheep usually walk up easy places, often stopping to pick about amongst the rocks. When ascending or descending a mountain, their mode of progression is a succession of walks, runs and jumps. When walking, the head of both rams and ewes is carried forward at a slight angle, but when stopping at gaze it is raised.

In the summer sheep are much tormented by flies and mosquitoes, and are often to be seen stamping and flicking their sides when these pests are oppressive, but they do not seem to stampede from them as deer will do.

Formerly wild sheep were more curious and confiding rather than shy. Richardson, in his "*Fauni-Boreali Americana*," says:

"Mr Drummond informs me that in the retired part of the mountains, where hunters seldom penetrated, he found no difficulty in approaching the Rocky Mountain sheep, which there exhibited the simplicity of character so remarkable in the domestic species; but that where they had been often fired at they were exceedingly wild, alarmed their companions on the approach of danger by a hissing noise, and scaled the rocks with a speed and agility that baffled pursuit."

All the old hunters of seventy years ago corroborate this, and bear testimony that the mountain sheep, which were often then to be seen feeding on the prairies in company with the antelope, were the tamest of all animals



STONE'S BIGHORN (*Ovis canadensis stonei*).

Shot by Mr P. N. Graham.

PLATE CVI.

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except, perhaps, the buffalo. It took them some time to learn that the sound of a gun meant danger, and when shot at often they only jumped about and stared at the intruder. Without doubt the range of the mountain sheep in former times occupied a great area, both in the plains as well as the mountains, and after feeding on the prairies they sought refuge in the "bad-lands" that border so many of the western rivers, or on the tall buttes that rise out of the prairies. Many old residents in the west thought that these prairie sheep were driven out of their former haunts to their last strongholds in the mountains; but this is no doubt an error, for knowing, as we do now, the habits of these sheep and their tenacity in clinging to their homes, it seems certain that these sheep of the plains were simply exterminated by man, whilst the sheep of the mountains always lived there and never migrated to lower levels. In the same way the wapiti, which were formerly abundant over the whole of the plains as far east as Omaha, and away north to the Canadian boundary, were exterminated, and had really no connexion with, nor were they driven to join, the herds frequenting the main range of the Rockies.

In early times the Indians of Wyoming, Montana, Utah and Nevada, hunted the wild sheep by driving them from below up to the summits of the mountains, where concealed bowmen shot at them with arrows at short range. Just as we find in Norway to-day the stone shelters used by the Lapps and primitive Scandinavians for the destruction of reindeer, so there are to be seen to-day in the mountains of Nevada such shelters built of stone slabs which were used by the Indians. These Indians also used the corral or pound, with diverging wings of stone, at the ends of which, no doubt, the women and children were secreted and from which they rose and drove the affrighted game into the stone prison. According to Mr Muir, who has seen the remains of these shelters in Nevada, they seem to have been worked on exactly the same principle as the pine fences formerly used by the Beothic Indians of Newfoundland for the capture of caribou, and which are still employed to-day by the Esquimaux, Yellow Knife, and Point Barrow Indians.

The Bannocks and Sheep Eaters seem to have depended very largely for their food on sheep, and the latter tribe of Indians are said to have killed little else.

Both of these tribes, when hunting, wore on the head and shoulders the skin and horns of the mountain sheep, and when stalking or awaiting their prey assumed a stooping position so as to simulate the animal as closely

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as possible; the legs of the hunters were smeared with white or grey clay, and certain precautions were taken to destroy the human scent.

George Bird Grinnell tells of an interesting episode which a Cheyenne Indian related to him: "A war party was sent out to take horses from the Shoshone. One morning, just at sunrise, the fifteen or sixteen men were travelling along on foot in single file through a deep cañon of the mountains, when one of them spied on a ledge far above them the head and shoulders of a great mountain sheep which seemed to be looking over the valley. He pointed it out to his fellows, and as they walked along they watched it. Presently it drew back, and a little later appeared again further along the ledges, and stood there on the verge. As the Indians watched, they suddenly saw shoot out from another ledge above the sheep a mountain lion, which alighted on the sheep's back, and both animals fell whirling over the cliff and struck the wide rock below. The fall was a long one, and the Cheyennes, feeling sure that the sheep had been killed, either by the fall or by the lion, rushed forward to secure the meat. When they reached the spot the lion was hobbling off with a broken leg, and one of them shot it with his arrow, and when they made ready to skin the sheep, they saw to their astonishment that it was not a sheep, but a man wearing the skin and horns of a sheep. He had been hunting, and his bow and arrows were wrapped in the skin close to his breast. The fall had killed him. From the fashion of his hair and his moccasins they knew that he was a Bannock."

In olden days the Blackfeet Indians killed large numbers of mountain sheep that lived about the prairies and buttes in Wyoming and Montana. Their method was to drive the sheep off the prairie on to one of these isolated buttes. A few young men ascended the little hill and chased the sheep from the hill, and when they were well on the prairie they were run down and killed by the mounted men, who soon encircled them.

Until quite recently the Sheep Eater Indians hunted sheep regularly about what is now the Yellowstone Park, where their chief strongholds were the head of Gray Bull, Meeteetsee Creek and Stinking Water. The Indians built long fences on the edge of the ridges, but did not use the pen at the apex as the prehistoric Indians did, but lay in wait for the game behind the fences and shot them with arrows as they passed at close range.

Until 1886 there were quite a number of sheep on the Stinking Water ridges, but their pursuit by skin, head and meat hunters after the Sheep Eaters left soon made them so scarce that they were reduced to small numbers. Moreover, they were further reduced by scab, a disease that

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also attacked the wapiti, and this was probably produced by contact with domestic sheep, which, in 1880-90, were introduced in some numbers. Anthrax also further curtailed their numbers, whilst eagles and mountain lions have always effected great havoc amongst the kids.

The Bear Paw Mountains, in 1880, even then a great wild sheep resort, were almost decimated in ten years by scab and anthrax, and it is doubtful if a single wild sheep exists there to-day. Here the hills are not high and the sheep, so conservative in their habitat, could not climb away from the infected area.

Next to man there is little doubt that the mountain lion is the greatest enemy of wild sheep in the Eastern Rockies.

Mr Hofer, long resident in Wyoming, relates that he and Colonel Pickett found nineteen or twenty skulls of sheep close to one rock. They had been killed at various times by mountain lions, or perhaps by a single individual. The marauder seemed to have lain hidden on a high rock, fifteen feet perpendicular on one side, and to have watched a game trail which could be plainly seen on both sides below the rock. As the sheep passed he leaped on the back of one. Sheep are said to leave a range of hills where mountain lions are in the habit of attacking them, and do not return for some time.

Mr Hofer also gives some interesting details of the habits of wild sheep and their indifference to man when he is above them. "In old times," he says ("American Big Game in its Haunts," p. 294), "it was sometimes possible to get a 'stand' on sheep, and, in my opinion, sheep often, even to-day, are the least suspicious of all the mountain animals. A mountain sheep always seems to fear the thing that he sees under him. If a man goes above him he does not seem to know what to do. I could never understand why, when one is above him, he stands and looks. I have sometimes been riding around in the mountains, and have come on sheep right below me. I have often thrown stones at them, and sometimes it was quite a while before I could get them to start. Finally, however, they would run off. They acted as if they were dazed." Yet he observes that under other angles of view mountain sheep were always wild and ran at once on seeing him. Yet, like all wild animals that are clever, mountain sheep soon learn to know where man will not molest them, for in the Yellowstone Park to-day, between Mammoth Hot Springs and Gardiner, sheep may often be viewed from the road at short range, and the drivers of the coaches sometimes flick at them with their whips to make them get out of the way.

THE GUN AT HOME AND ABROAD

In Wyoming and Montana the typical race has practically disappeared from the prairie and butte region owing to the settlement of white men, but there are still a few in desert places where the water is so bad or scarce that man can never desire the district for farming purposes. Away to the south and south-west in Arizona, Old Mexico and Lower California there rise from the arid deserts buttes and small ranges of mountains, which are still frequented by local forms of wild sheep, and in such places water is very scarce and only used by the sheep at long intervals. Yet they do go to the water holes, for most of the sheep killed there are shot when they come to them.

Nowadays, the haunts of the mountain sheep are the Alpine meadows close above the timber-line and shadowed by towering peaks. The hunter must get to some point above these if he is to find the game. From some sheltered ridge he must carefully survey the rolling slopes below and the verges of dwarf willows that line the little watercourses which come from the snow-banks far up the mountain sides. If he is careful in his search with the glass, he may in time discover ten, fifteen or twenty sheep. These will, in all probability, be only ewes with, perhaps, a young ram or two whose horns have just begun to curve backwards.

The great difficulty in all sheep hunting is to find the big rams. They are not numerous and have a way in summer and autumn of occupying different ranges to the females and young. It is probably true that at this season they retire under the summits of the highest peaks and so often escape observation.

It is true that a man must find a hundred sheep before he sees one with a head that is worth a shot, and then, having found it, it may take weeks to obtain the desired trophy.

It is essential that a man should be of the right age and in the pink of condition to kill the mountain ram, but its pursuit will take him into such glorious scenery, and furnish him with such incidents of hope, despair and ultimate triumph, that he feels it is good to have lived. Even in Alaska, where sheep are still abundant, unless a man achieves one of those flukes in which he finds the rams at once and surprises them in one of their dazed moods, he must be prepared for very severe toil and considerable exposure, before standing over those curled horns.

Even so good a hunter as Mr Charles Sheldon was not invariably successful in his expeditions, and when he failed it must be remembered that he was pioneering new ground of which he had no previous information. In



STONE'S BIGHORN (*Ovis canadensis stonei*).

Length on front curve $34\frac{1}{2}$ inches: Circumference $13\frac{1}{2}$ inches: Tip to tip $21\frac{1}{2}$ inches.

Locality: Cassiar.

Shot by Mr P. N. Graham.

PLATE CVII.

THE MOUNTAIN SHEEP

some of these trips he was most successful, but in others, such as the Atlin and the Macmillan ranges, he saw plenty of sheep but failed during the short summer season to locate the rams. I mention Mr Sheldon frequently because he is the type of naturalist-hunter which those who desire to shoot sheep should follow. In this I do not mean that they should follow his old trails, but his pioneer spirit. The would-be hunter should study the map of Alaska and, if possible, select the virgin grounds which others have not as yet exploited. It is true that in such cases failure may be met with, but in such out of the way spots there are still great heads.

There is one habit common to all wild sheep, from the great *Ovis poli* to the little mouflon, and it is well to be prepared for it. Mountain sheep often feed slowly up a steep hillside till they come to the ridge. Here they stand like statues and survey the landscape, whilst the hunter, who has perhaps been shivering for hours behind a rock, at last prepares for action, and to follow them. He knows that in a moment, when they are satisfied that no danger exists below, they will pass over the crest and will probably settle down on the other side. There! They have gone! The hunter is all impatience and if they were only deer he would be right in following them at once, for perhaps he could reach that high point and obtain a shot before they are out of range. But these are sheep, and sheep have a way of guarding the rear as well as the front. He must remain where he is for quite a while longer, for, just as he has made up his mind that they have gone for good, back comes an old ewe or a ram, who again takes a searching view of the landscape the band has recently quitted. Now, if the hunter had followed at once, as every hunter has done, it would have been a case of check-mate. So in sheep hunting, waiting is as necessary as dash. When the rear-guard has gone it is generally safe to make the ascent, for he seldom returns a second time.

Like most of the other ungulates, wild sheep are great frequenters of "licks," which are places where the soil is impregnated with saline solutions. These spots are visited almost daily by sheep of all ages, and are often the favourite watching places for red men who require meat, and white men who wish to murder a fine animal without the trouble of hunting for it. It is curious that in cold weather sheep hardly come to these "licks" at all.

With regard to the tastes of the various races of American sheep, which certainly live for the most part on grass, the Alaskan and Stone's sheep

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find little grass in the high Alpine meadows and cliffs where they dwell. Here they eat a variety of mosses, saxifrages and dryas. On the other hand, the Californian sheep inhabiting the San Pedro Martyr Mountains break holes in the hard, prickly rinds of the Venaga cactus with their horns and eat the pulp inside.

Mr Edmund Heller seems to have been one of the few who have studied the habits of these southern sheep. The largest bunch seen by him was eleven; and only one adult ram was sighted. He says that they inhabit the middle line of cliffs, whilst a few were seen on the level stretches of the Mesas.

“ They are constantly on guard and very little of their time is given to browsing. Their usual method is to feed about some high cliffs or rocks, taking an occasional mouthful of brush, and then suddenly throwing up the head and gazing and listening for a long time before again taking food. They are not alarmed by taking scent, like deer or antelope, the direction of the wind apparently making no difference in hunting them. A small bunch of six were observed for a considerable time feeding. Their method seemed to be much the same as individuals except that when danger was suspected by any member he would give a few quick leaps, and all the flock would scamper to some high rock and face about in various directions, no two looking the same way. These manoeuvres were often performed, perhaps once every fifteen minutes. Their chief enemy is the mountain lion, which hunts them on the cliffs, apparently never above the watering places.”

The curving horns of the wild sheep have always given rise to curious fables and theories. The old tale that the horns of the males were used as cushions on which the animal alighted when leaping from high places is too ridiculous to consider, whilst the modern hypothesis advanced a few years ago, by Mr George Wherry, that the form of the horn and the position of the ear enables the wild sheep to determine the direction of sound when there is fog, is a clever theory which has no foundation in fact. Anyone who has surprised mountain sheep and fired several shots from above will have noticed how helpless they are to determine the exact location of the shot unless the hunter is foolish enough to show himself, and then his position is recognized by sight alone. Moreover, this hypothesis takes no account of females and young which in mists and under other conditions need protection quite as much as the adult males. Moreover, if the opinion

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of sheep hunters could be collected they would probably agree in saying that female sheep are slightly quicker to notice danger than the males, though both are smart enough.

Owing to the enormous destruction of wild sheep by man and the charm which these interesting animals add to their native mountains, it is worthy of note that many states have enacted laws for their whole or partial protection. In Colorado for instance, now almost depleted of sheep, there are several instances where public sentiment has been aroused just in time and saved some remnants of the once abundant flocks. At Silver Plume there is a bunch of sheep which is absolutely protected by the miners and residents, and which have become quite tame. In North Dakota, parts of California, Arizona, Montana, Colorado, Utah, Texas, and New Mexico, sheep are more or less protected. Whilst in South Dakota, Wyoming and Idaho, only one mountain sheep is allowed to be killed during the open season. In Oregon and Nevada they are not protected, and in Alberta there seems to be one law for the Indian, and another for the white man. Broadly speaking it may be said that most of the states have excellent laws, but no means of enforcing them.

The hunter, whether British or American, going out with a certified guide, seldom infringes the law, but residents, prospectors, trappers, etc., always do what they like when meat is required, and to this the game wardens regularly shut their eyes. In British Columbia there is very little unauthorized shooting, and in Alaska, where sheep are still abundant, the hunter has to produce the heads he has shot before being permitted to take them out of the country.

Enormous numbers of sheep have, of recent years, been killed by the Stony Indians in the great mountainous area extending to the north as far as the head waters of the Peace River, west to the Ashnola region in British Columbia, and south from Banff to the Montana frontier. In fact, nearly all the fine sheep heads, just as good as the old time rams of Montana and Wyoming, that have been brought to the taxidermists at Banff, have been illegally shot by the Stony Indians. Mr Bryan Williams, the energetic game warden at Vancouver, tells me that he has stopped these Indians coming into British Columbia on the eastern boundary, but not before they had decimated the splendid flocks of the Ashnola country. This was, fifteen years ago, the finest resort of mountain sheep in the North American continent. To-day the authorities of Alberta still permit the Stony Indians to harass the game at all seasons, but take good care

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that no white man, legitimately trying to get a good sheep by fair hunting, shall go after them. Of course, travelling Indians must have meat, in order to live, but when they do such things as to wipe out the whole of the game in a certain area, as they did a few years ago in the Itcha Mountains, where they killed the whole of the caribou, and left the carcasses to rot, it is time some restriction was placed upon them.

I shall never forget one evening in Wyoming on the Red Fork of Powder River, when smoking a pipe, and regarding with joy the heads of two splendid wapiti stags I had just shot, I looked upwards to the top of the bluff and there, against the setting sun, was a magnificent mountain ram. He stood for half an hour looking down at our camp, until twilight hid him from view, and I experienced all the hunter's desire to capture those splendid horns. For two mornings I climbed at dawn and found his fresh tracks, but I never saw him again.

BUFFALO AND MUSK OX

THE American bison or buffalo, *Bison bison* (Linnæus), is in many ways the most interesting as it is now the scarcest of wild animals to be found in the New World. A large bull is about 5 feet 8 inches at the shoulders; 10 feet from nose to root of tail; tail (vertebræ), 1 foot 3 inches. Specimens of over 6 feet at the withers have been recorded, and cows are usually about 4 feet 10 inches at the shoulder. The horns are curved and cylindrical; in bulls they measure from 18 to 22 inches in length and in girth from 14 to 17 inches. The spread ranges from 20 to 34 inches. The horns of the cow are smaller and thinner. About 1,800 lb. is the average weight of a bull, but Hornaday has weighed two living bulls of 2,190 lb. and 1,990 lb. Audubon and Bachman state that fat cows weigh 1,200 lb., though Henry remarks that they are seldom heavier than 700 to 800 lb.

The bull has the head, tail, legs, and lower parts of the neck very dark brown, with lighter brown on the upper parts of the body and very pale brown on the shoulders and rump. In spring the upper parts are bleached to a pale yellow, the head and neck looking almost black by contrast. The cow is somewhat darker at all seasons. Newly-born calves, which I saw in the National Park at Banff, were of a dull reddish-yellow and very pale on the under parts and legs.

The beard on the chin of the bull is about 11½ inches, and the hair on the forehead, when completely developed, is often over one foot in length.

The mountain buffalo of the north often has an almost black "robe," and in past times skins of various tints were often obtained and known as "buckskin," "blue," "beaver," "white" and "pied" robes. White robes were greatly treasured by the Indians and considered great "medicine." An historic robe of pure white was the "medicine" of the great Cheyenne Chief, Roman-nose, but it did not save his life when he charged fearlessly at the head of his warriors in the fight with Forsyth's troops entrenched on Beecher Island, September 17, 1868.

It can scarcely be said that the races of American buffalo have much claim to sub-specific distinction. The great black Wood buffalo, called by Rhoads *B. b. athabascæ*, is only a large and dark buffalo growing a finer pelage in its Arctic home. The Rocky Mountains were said to possess a buffalo smaller than that of the plains, but this is by no means proved,

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whilst from the paucity of specimens it cannot be asserted that the extinct buffalo of the Alleghanies was in any way different.

The bison or buffalo was first discovered by the explorers of the sixteenth century. Cortez, the conqueror of Mexico, reached the City of Mexico in 1521, and saw there in a menagerie the first specimen. This had been sent as a present to Montezuma and it is interesting to note that it was exhibited at least 300 miles south of its natural range. In 1530, nine years later, Alva Nuñez Cabeza de Vaca was wrecked on the Gulf Coast, and when travelling inland he met with herds of the bison on their native range.

In Davis's "Spanish Conquest of New Mexico," 1869, p. 67, Cabeza is thus quoted:

"Cattle come as far as this. I have seen them three times, and eaten of their meat. I think they are about the size of those in Spain. They have small horns like those of Morocco, and the hair long and flocky, like those of the Merino. Some are light brown (*pardillas*), and others black. To my judgment, the flesh is finer and sweeter than that of this country (Spain). The Indians make blankets of those that are not full grown, and of the larger they make shoes and bucklers. They come as far as the sea-coast of Florida and in a direction from the north, and range over a district of more than 400 leagues. In the whole extent of plain over which they roam, the people, who live bordering upon it, descend and kill them for food; and thus a great many skins are scattered throughout the country."

It was in 1540 that Coronado crossed the southern part of Texas, entering from the west through Arizona and New Mexico. He reached the home of the "crooked-backed oxen" in 1542. Castaneda, one of his party, says: "We were much surprised at meeting innumerable herds of bulls without a single cow, and other herds of cows without bulls."

The first Englishman to see the northern herd of buffalo was Sir Samuel Argoll, afterwards deputy-governor of Virginia, and he came upon them in 1612 near Washington, in the district of Columbia. He pushed his ship up the Potomac River and discovered the head of it, and then journeyed a short distance inland with Indians, who killed a couple of the "cattle as big as kine," and says ("Purchas Pilgr.," 1625, Vol. IV, p. 1765), they are "heavy, slow, and not so wild as other Beasts of the wilderness."

The history of the buffalo is a gradual shrinkage on its eastern range as the white man invaded the country and moved westwards. Each century



A COMPARISON BETWEEN AMERICAN AND EUROPEAN BISON.

American Bison killed in Wyoming.
 Length on front curve $15\frac{1}{2}$ inches; Circumference $14\frac{3}{8}$ inches;
 Tip to tip $19\frac{1}{4}$ inches.

Aurochs killed in Western Caucasus.
 Length on front curve 18 inches; Circumference $12\frac{1}{2}$ inches;
 Tip to tip 16 inches; Widest inside 20 inches.

Shot by Mr St George Littledale.

PLATE CVIII.

BUFFALO AND MUSK OX

pushed the buffalo further to the west, until by 1870 there were only two great herds which met and overlapped in a narrow belt of Wyoming.

When Alexander Henry came to the Red River in 1799 he found the buffalo swarming along the Red River Valley, Manitoba, and this country, according to Alexander Ross, was still overrun with these animals until 1810. In 1812 came the first Scottish emigrants to found the Red River Colony, and the buffalo soon began to disappear, until by the year 1860 they were rare animals in Manitoba. The last band was seen in 1861, when an immense herd was seen in Grand Valley, the present site of the town of Brandon. Stragglers were still seen in Manitoba until 1883.

The total area originally inhabited by buffalo in North and South Dakota, Montana, Wyoming, Nebraska, Kansas, Colorado, Texas and Oklahoma, reaches a total of 750,000 square miles, or about half of the plains, and it has been estimated that in early times this range held about 40,000,000 buffalo, whilst the forest region of 1,000,000 square miles, being less populated, probably contained 5,000,000 buffalo. Colonel C. J. Jones, who has so closely studied the past history of this animal, estimated that in 1870 there were 14,000,000 buffalo still alive in one-third of their original range.

Although scattered numbers of buffalo were to be found all over their range at all seasons, it must be concluded that the buffalo herds were migratory. In spring they travelled north for three or four hundred miles, then circled and headed back for their winter range in the autumn. All observers agree that this was the case amongst the two great herds, that were originally one, and were divided owing to the building of the Union Pacific Railway. During these migrations they were preyed upon by natural enemies, such as wolves, grizzly bears and Indians, and suffered fearful losses in bogs, prairie fires, blizzards, and rivers covered with thin ice. In the severe winter of 1871-2 enormous numbers of buffalo were buried in the snow in Dakota, and whole herds were found lying dead in the hollows where they had sought shelter. In the winter 1880-1, still known in Dakota as the "blizzard winter," the conditions were so severe that no buffalo could have survived them; whilst in that of 1870-1 great herds passed north but never returned. Every buffalo herd that passed was followed by large packs of wolves that picked off the young and the wounded. Prairie fires also undoubtedly destroyed large numbers. The Sioux, Cheyennes, Arrapahoes, and Black-feet Indians practically lived on them at all seasons, and yet so great was the number of the

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animals, and so regular their increase, that their depredations made but little difference.

Armed with bow and arrow or lance, and both with and without the aid of horses, the Indians killed enormous numbers. In the north they pursued them during the winter on snow-shoes, and sometimes a whole tribe would unite in forming a buffalo pound, when the animals were either led or driven down converging lines to the edge of a steep cliff, over which they were forced. Perhaps one of the worst causes of destruction of the buffalo, was the treacherous ice on the rivers in spring. In winter they were accustomed to cross the ice in safety, but in spring there was an impulse to wander north in compact masses. A few rivers were crossed in safety, and then one would be encountered where the ice had become rotten. Those in front went crashing through the ice and thousands more were pushed forward to death by the frenzied herd behind.

Alexander Henry, writing in 1801, describes the stench from the vast numbers of drowned buffaloes on the Red River, whilst John MacDonnell speaks of a similar disaster on the Qu'Appelle River in May, 1795. He spent one day (May 18), in counting the carcasses and found that they numbered 7,360, drowned, and mired along the river and in it.

In old times residents on the Missouri River were familiar with the early flood that carried countless buffalo carcasses and stored them in the Mississippi mud. Practically all the large northern rivers were a death trap in the spring; but with all this vast destruction there seems to have been little apparent difference until the coming of the rifle. With this weapon the doom of the buffalo was sealed.

Buffaloes were always accompanied by the cow-bird (*Molothrus ater*), a member of the starling family. It is a very peculiar bird as it never pairs, makes a nest, or brings up its own young. "Free-love" is the motto of this peculiar bird, and when the female is ready to lay her eggs she searches for a nest of some small birds and deposits them there. She then returns and mixes with the flock whose host is the buffalo. I observed a flock of these birds in the National Park at Banff in 1908, and could not help comparing some of their movements and attachment to the large animals with those of the rhinoceros bird. The cow-birds do not climb up and search the skin of the buffalo as the ox-peckers do in Africa, but walk sedately beside their friend or flit over its back catching flies. When the animal is at rest, they sit along its spine. Their attachment to the buffalo is so intimate that the Indians say that they nest in the wool between

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the horns of the big bull. There may be some foundation for this myth, for old residents in the west used to say that the skulls of buffalo, still holding the black frontlet of hair, were often used by small birds as nesting places. Mr Thompson-Seton relates an instance of a single cow-bird which, instead of migrating in the autumn of 1900, stayed with a herd of buffalo in the park at Silver Heights, near Winnipeg, throughout the winter. This little bird attached itself to a big bull that was so fierce that no one dared go near to him. By day it fed on the buffalo's food and at night it roosted in a hollow it had made in the wool just behind the horns.

Catlin gives an interesting description of a buffalo wallow ("North American Indians," Vol. I, pp. 249, 250).

"In the heat of summer these huge animals, which, no doubt, suffer very much with the great profusion of their long and shaggy hair, or fur, often graze on the low grounds in the prairies, where there is a little stagnant water lying amongst the grass, and the ground underneath, being saturated with it, is soft, into which the enormous bull, lowered down upon one knee, will plunge his horns, and at last his head, driving up the earth, and soon making an excavation in the ground, into which the water filters from amongst the grass, forming for him in a few moments a cool and comfortable bath, into which he plunges like a hog in his mire.

"In this *delectable* laver he throws himself flat upon his side, and forcing himself violently around, with his horns and his huge hump on his shoulders presented to the sides, he ploughs up the ground by his rotary motion, sinking himself deeper and deeper in the ground, continually enlarging his pool, in which he at length becomes nearly immersed, and the water and mud about him mixed into a complete mortar, which changes his colour, and drips in streams from every part of him, as he rises up upon his feet, a hideous monster of mud and ugliness, too frightful and too eccentric to be described."

These wallows dotted the prairies in every direction and, although most of the skulls and bones have now been removed, they bear silent witness to the great numbers of buffaloes which once lived there.

The leader of the northern migration in spring was always an old cow, and her instinct to move was quickly transmitted to the rest of the band, numbering hundreds of thousands. For two or three weeks this migration used to take place with all its attendant risks, such as the attacks of man and wolves and the danger of crossing swollen or treacherous rivers, until

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the herds reached some haven where the young grass on the prairie was good and sweet. Here they would stay until the cows began to bring forth their calves.

Colonel R. I. Dodge, one of the best authorities on the buffalo, has given us many interesting details of the movements and life history of the great Southern herd, which he himself witnessed, before the advent of the railways. In "Our Wild Indians," p. 283, he tells us:

"Early in the spring, as soon as the dry and apparently desert prairie had begun to change its coat of dingy brown to one of the palest green, the horizon would begin to be dotted with buffalo, single or in groups of two or three, forerunners of the coming herd.

"Thicker and thicker and in larger groups they came, until, by the time the grass is well up, the whole vast landscape appears a mass of buffalo, some individuals feeding, others standing, others lying down, but the herd moving slowly, moving evidently to the northward. . . . Some years, as in 1871, the buffalo appeared to move northward in one immense column, oftentimes from twenty to fifty miles in width, and of unknown depth from front to rear. Other years the northward journey was made in several parallel columns, moving at the same rate, and, with their numerous flankers, covering a width of a hundred or more miles.

"The line of march of this great spring migration was not always the same, though it was confined within certain limits. I am informed by old frontiersmen that it has not, within twenty-five years, crossed the Arkansas River east of Great Bend, north-west of Big Sand Creek. . . .

"When the food in one locality fails they go to another and, towards fall, when the grass of the higher prairie becomes parched by the heat and drought, they gradually work their way back to the south, concentrating in the rich pastures of Texas and the Indian Territory, whence, the same instinct acting on all, they are ready to start together on the northward march as soon as spring starts the grass."

As regards the Wyoming, Dakota and Montana herds at this date most of these buffalo moved north in spring, leaving only a few scattered herds which spent the summer there. The main body went north and passed the summer in Manitoba and on the plains of Saskatchewan.

Usually in April the buffalo cow produces her calf after a gestation of nine and a half months. Cows are, however, somewhat irregular as to their

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breeding season, for calves are sometimes born as early as January and often as late as August. The guardian of the Banff Park told me that there is no fixed season, for though the majority of calves are produced in April and May, many continue to appear in July and August, whilst a very late one in September is not a rarity. In less than an hour after her labour, of from twenty-five to forty-five minutes' duration, the mother is ready to defend her offspring against the attack of wolves, and when they threaten she utters a loud bellow and the males at once come to her assistance. In old days several observers have seen bulls surround a newly-born calf and escort it in their midst from some outlying spot to the safety of the herd. If a calf becomes separated the grey wolves soon hunt it down and devour it, whilst it is still alive. The mothers are very bold in defence of their young and will charge a man at once if the calf begins to bellow. In confinement the bulls are usually very inoffensive until they become old, but the cows may at any moment assume the aggressive if they become momentarily separated from their offspring.

Catlin ("North American Indians," 1866, Vol. I, p. 255) tells us that when a large herd was stampeded numerous calves were left behind and endeavoured to conceal themselves by pushing their heads in any grass or sage brush that was near at hand. In this position they did not move until touched by the hand and then they kicked out freely. Alexander Henry says that the cows came back and searched for their young when the hunt was over.

The general habits of buffalo seem to be much the same as other oxen. In the early hours they graze. When the sun becomes warm they lie down and chew the cud. About noon they go to water and after drinking stand about for an hour or two and bask or lie in the sun. About three they rise and feed again until dusk and then rest for the greater part of the night.

Audubon and Bachman thought that the bull buffalo selected a mate and did not leave her until she was about to calve, but this view will not be shared by modern naturalists, since it is known that all the oxen are quite promiscuous in their love affairs. The bulls occasionally fight savagely and the strongest bull drives others out and holds as many cows as he can.

The annual rut seems to take place in July, the cows remaining in season for about two months. Catlin gives an interesting account of the mating of the buffalo:

"The '*running season*,'" he says ("North American Indians,"

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Vol. I, p. 249), "which is in August and September, is the time when they congregate into such masses, in some places, as literally to blacken the prairies for miles together. It is no uncommon thing at this season, at these gatherings, to see several thousands in a mass, eddying and wheeling about under a cloud of dust, which is raised by the bulls, as they are pawing in the dirt, or engaged in desperate combats, as they constantly are, plunging and butting at each other in the most furious manner. In these scenes the males are continually following the females, and the whole mass are in constant motion, and all bellowing (or 'roaring') in deep and hollow sounds, which, mingled all together, appear, at the distance of a mile or two, like the sound of distant thunder."

Frémont, too, gives a description of a fight ("Exploring Expedition," 1845, p. 26):

"July 7, 1842.—In the course of the afternoon, dust rising among the hills at a particular place attracted our attention, and, riding up, we found a band of eighteen or twenty buffalo bulls engaged in a desperate fight. Though butting and goring were bestowed liberally and without distinction, yet their efforts were evidently directed against one—a huge, gaunt old bull, very lean, while his adversaries were all fat and in good order. He appeared very weak, and had already received some wounds, and, while we were looking, was several times knocked down and badly hurt, and a very few moments would have put an end to him. Of course we took the side of the weaker party, and attacked the herd; but they were so blind with rage that they fought on, utterly regardless of our presence, although, on foot and on horseback, we were firing in open view within twenty yards of them. But this did not last long. In a very few seconds we created a commotion among them. One or two, which were knocked over by the balls, jumped up, ran off into the hills; and they began to retreat slowly along a broad ravine to the river, fighting furiously as they went. By the time they had reached the bottom we had pretty well dispersed them, and the old bull hobbled off to lie down somewhere."

Both in a wild state and in confinement the master bull amongst oxen and antelopes takes possession of the herd for a few years and is then himself beaten out and deposed. The younger bulls keep out of his way, but sometimes a lusty youngster tries a bout with the master and usually

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gets beaten. In time, however, the old bull's strength decreases as that of the younger rival improves, then a great battle takes place and the master is turned out for good. In the case of deer, the master stag enjoys a longer innings and may control the females within a given area for half a lifetime; and after closely studying red deer for many years I am inclined to think that the only time that he fights to desperation is when his position as king is seriously assailed. I have known a very powerful stag hold nearly the whole of the hinds in a large park for ten years. This, however, is exceptional. In a small herd the buffalo bull has a short reign, perhaps for two or three years, and in former times the many solitary bulls seen on the plains were usually old outcasts. These old fellows were seldom molested by man, though when age came upon them they usually fell victims to the hands of grey wolves when the latter were hard pressed for food.

Catlin describes several of these battles and says ("North American Indians," Vol. I, pp. 257-8):

"But a short time since, as one of my hunting companions and myself were returning to our encampment with our horses loaded with meat, we discovered, at a distance, a huge bull encircled with a gang of white wolves. We rode up as near as we could without driving them away, and, being within pistol shot, we had a remarkably good view, where I sat for a few moments and made a sketch in my notebook, after which we rode up and gave the signal for them to disperse, which they instantly did, withdrawing themselves to a distance of fifty or sixty rods, when we found, to our great surprise, that the animal had made desperate resistance until his eyes were entirely eaten out of his head, the grizzle of his nose was mostly gone, his tongue was half eaten off, and the skin and flesh of his legs torn almost literally into strings. In this tattered and torn condition the poor old veteran stood bracing up in the midst of his devourers, who had ceased hostilities for a few minutes, to enjoy a sort of parley, recovering strength and preparing to resume the attack in a few moments again. In this group some were reclining to gain breath, whilst others were sneaking about and licking their chops in anxiety for a renewal of the attack; and others, less lucky, had been crushed to death by the feet or the horns of the bull. I rode nearer to the pitiable object as he stood bleeding and trembling before me, and said to him, 'Now is your time, old fellow, and you had better be off.' Though blind and

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nearly destroyed, there seemed evidently to be a recognition of a friend in me, as he straightened up, and, trembling with excitement, dashed off at full speed upon the prairie, in a straight line. We turned our horses and resumed our march, and when we had advanced a mile or more, we looked back and on our left, where we saw again the ill-fated animal surrounded by his tormentors, to whose insatiable voracity he unquestionably soon fell a victim."

In August and September the sexes were mixed, but by the end of September the bulls and cows were divided. By October the ragged appearance was lost and they were in good condition and pelage to meet the rigours of winter, and led by some old cow the herds gradually worked north again.

In confinement bulls continue to breed and be permitted in the herd until they are twelve or thirteen years old, but after this they are generally driven out, and, bar accidents, will live for twenty or more years. Cows have been known to breed for twenty-nine years, and the period of life of the buffalo seems to be very much the same as deer and horses. Colonel Jones thinks that the life of the buffalo is longer than domestic cattle, and says that he knew of a cow that lived in the Zoological Gardens in Paris for thirty-one years, whilst he believes that he has seen wild ones that were ten or fifteen years older. The cow begins to breed at three years of age and has a calf nearly every spring or summer.

The disappearance of the buffalo has been very rapid. At the beginning of the nineteenth century they had vanished from east of the Mississippi. In 1832, Catlin calculated that 150,000 to 200,000 robes were brought to market each year, which would mean a slaughter of from two to three millions by the Indians alone. Frémont says they were going fast on the western slope of the Rockies, but they were still abundant on their great range east of the Rockies. He says ("Exploring Expedition," 1848, pp. 144-5):

"At any time between the years 1824 and 1836 a traveller might start from any given point south or north to the Rocky Mountain range, journeying by the direct route to the Missouri River, and during the whole distance his road would be always among large bands of buffalo, which would never be out of his view until he arrived almost within sight of the abodes of civilization. At this time (1842) the buffalo occupy but a very limited space, principally along the eastern base of the Rocky Mountains, sometimes extending at their southern

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extremity to a considerable distance into the Plains between the Platte and Arkansas Rivers, and along the eastern frontier of New Mexico, as far south as Texas."

Frémont was, of course, at that time unaware of the existence of buffalo in Manitoba and Athabasca. The death knell of the buffalo was sounded by the building of the Union Pacific Railway which, in 1867, reached Cheyenne, in the very heart of their country. It cut the buffalo into two herds, which were known respectively as the northern and southern herd, and let loose upon them a great horde of white men hunting both for meat and skins, and armed with rifles of precision. Again, the Santa Fé Railroad crossed Kansas in 1871, and invaded the summer home of the southern herd, now, according to Hornaday, reduced to about 4,000,000. Then began the second great massacre. During the next three years nearly 3,600,000 buffalo were killed. A few scattered herds survived for a few years, and the last band was seen in the "Panhandle" of Texas in 1886; the last individuals of the southern herd were seen in New Mexico. One was shot and the other four were killed later.

In the last four years of the northern herd, in 1881, 1882, 1883 and 1884, hunters shipped out 50,000, 200,000, 40,000, and 300 skins, and in 1885 not one. A small remnant eked out a precarious existence in the mountains of Wyoming until the winter of 1886 when the last were killed.

The last seen on the Upper Saskatchewan were in 1888 and 1889.

I was hunting in the Big Horns one day in September, 1886, when I came on the fresh track of a large buffalo bull. The trail was found in an open park, but soon went into the timber, where my hunter and I followed it. For two hours we managed to hold the line through dense forest, and were much excited to find that we were close behind the bull, as fresh droppings, quite warm, were seen twice. Whilst descending a steep hill, we suddenly heard a tremendous crash in front, followed by other noises of breaking sticks, clearly showing that the game had been alarmed. Running forward, we expected to see the buffalo, which we could now hear galloping along the edge of the wood below, but he kept closely to the edge of the timber and did not come into view. On reaching the spot where the bull had started we soon found the cause of alarm to have been a grizzly bear, which had crossed in front of the buffalo and given its wind to the nervous bovine. This was very bad luck, yet we continued on the spoor until dusk in an arduous chase, for the frightened animal led us over some terrible country. The buffalo continued to gallop for nearly an hour and

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only stopped to pick its way when fallen timber obstructed the game trails, and then set off again when the ground became more level. As night came on we were many miles from our horses, which we feared might be stampeded by a bear, so it was with great chagrin that we retraced our steps from the chase of one of the last of the buffalo. The chance of seeing another buffalo did not occur again.

There have been many attempts to preserve the buffalo, and it is satisfactory to think that most of these have been successful. Perhaps the greatest success is the Allard herd. Charles Allard, a ranchman of Montana, secured a few buffalo and kept them in the Flathead Reservation until 1888, when they numbered thirty-five, and in 1907 the increased stock, added to the herd of one Pablo, an Indian, raised the numbers to 628. In 1908 these were bought by the Canadian Government and transported by train to their new reserve to the west of Edmonton, where they are now flourishing.

Dr Hornaday ("Rep." Amer. Bison Soc. 1908, p. 74) estimated that there were about 2,047 buffalo in a wild state and under domestication. At the present day there are probably nearly double this number, and there seems no fear that the species may be extinct; it is thus possible that we shall yet see the buffalo restored to large tracts of their original range (at present useless for farming), where sportsmen may be allowed to hunt for and shoot a single specimen at a moderate fee.

Poor Phil Oberlander, who was killed by an African buffalo on the Nile in 1911, was so determined to add an American bison to his collection that he offered the custodian of the Yellowstone herd a large sum of money (£350) to be allowed to shoot a bull. His offer was at first scorned, and he was told to leave the place at once or he would be arrested; but on reflection the Committee of management discovered that one old bull was worn out and dangerous, and that £350 was a useful sum of money. The result was that Oberlander killed the bull through the bars of the enclosure, paid his money and took his very tame trophy to Europe. He told me these facts himself and showed me a photo of the dead bull with himself standing beside it. The moral is that cash can still do a good deal, even in official circles in America as elsewhere. We often hear sad jeremiads on the disappearance of the American bison, but all who have carefully studied the questions of colonization will agree that when white men enter a "new" country and take up land for the purposes of farming, the first thing that they do is to destroy the wild animals that eat grass. Most of the early

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settlers are poor and without much sentiment. They find a stock of fresh meat which saves them from killing their own beasts, and hides and horns are at all times a saleable commodity. When, therefore, railways enter a new country teeming with game, the fate of the wild animals is sealed, unless there exist large tracts, as in East Africa, which are useless to farmers, and which may be set apart as government reserves for the sole preservation of game.

On all the farms of East Africa the settlers are killing the game to-day not in hundreds but in tens of thousands, and the government is as powerless to prevent them doing so as the American government was to stop the killing of the buffalo and the wapiti, or the British and Dutch governments to stay the fearful slaughter in the plains of South Africa. History goes on repeating itself, and the destruction of the buffalo would just as surely take place in the year 1914 as in 1875-86 were the conditions the same. There are now very few places in the world where big game is abundant, and though the traveller may be faced with long and arduous journeys to reach them he is sure of finding the wild animals when he gets to the far north-west of Canada and the interior parts of Central Asia and Africa.

With the present rapid rate of railway construction, which is now pushing every year deeper and deeper into the game sanctuaries, it is only reasonable to think that at the end of this time the big game hunter and lover of wild beasts will be hard put to it to find any untrampled wastes where he can find things as they used to be; for by that time all the game that is left will, for the most part, be in government reserves—that is to say, if the governments of the various countries do not act as they generally do—too late.

The destruction of the buffalo was therefore due to the inevitable law of human progress, if it may so be called, and no sentimental considerations would ever have prevented it.

To-day the last remnants of the millions of buffalo are found in the woods of Mackenzie, adjoining the Great Slave Lake in Northern Canada. Various authorities have attempted to compute the numbers of these large wood bison, but it is only safe to say that their numbers are few and that they have seldom been seen by white men. At present they are supposed to be strictly preserved like the musk oxen, and the Canadian North-West Mounted Police have instructions to confiscate all horns and robes, but this does not prevent them being killed by the Indians or any chance wandering trapper when the opportunity occurs.

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The Musk Oxen belong to a sub-family, namely *Ovibos*, which is related to the takins (*Budorcas*), the bisons and the sheep. As a matter of fact, however, *Ovibos* has no very near relatives, and, since palæontology does not help us, the genus must be regarded as an isolated one with some affinity to the sheep. The height of the male at the shoulder is a little over four feet. The whole of the thick-set body and head is covered with a dense pelage of long and coarse brown hair, being somewhat curly and matted about the shoulders; the forehead has a distinct tuft and there is long hair on the fringe of the chin, throat and chest. On the muzzle, lower parts of the limbs and a strip between the horns, the hair is shorter and finer. There is also a soft woolly under-fur. Between the horns, on the muzzle and below the knees and hocks, the colour is buff or yellowish white.

The horns of the male are expanded, and flattened at the base, and separated, like those of the white-tailed gnu, by a narrow strip of skin. The curvature is at first outwards, then downwards and slightly backwards, and finally upwards and slightly forwards. In colour they are yellowish brown, becoming darker towards the tips. The horns of the male are usually from 23 to 24 inches long. The longest head recorded by Rowland Ward is 33 inches, with a basal expansion of $12\frac{1}{2}$ inches.

The horns of the female are similar to those of the male, but less expanded at the base, shorter and thinner; they seldom measure more than 18 or 19 inches.

In 1908 I examined, in Winnipeg, six unusually fine musk ox heads, killed in the previous winter to the east of the mouth of the Mackenzie. Amongst them was a remarkable specimen, probably one of the two largest in the world. It measured 31 inches along the outer curve and was 14 inches across the palm. I had it photographed and here present its portrait.

Formerly the musk ox existed in Central Europe, and its remains have been found in the Pleistocene gravels of England, and in several parts of Germany, in association with the bones of the reindeer, the mammoth and the woolly rhinoceros. In North-Eastern Asia, where two skulls were discovered by the Russian naturalist, Pallas, on the banks of the Obi and in the Siberian tundra, it may have existed until a later date, as these were found in superficial deposits.

At the present day the musk ox has a very wide distribution along the shores of Baffin's Land, East Greenland, North Greenland, Grinnell Land, and Arctic America east of the Mackenzie River. Within the memory of



MUSK OX.

Length on outside curve 31 inches: Breadth of Palm $13\frac{1}{4}$ inches: Tip to tip 27 inches.

Shot near Fort Churchill, Hudson Bay, 1908.

PLATE CIX.

BUFFALO AND MUSK OX

man it occurred west of the Mackenzie, and skulls of recently killed animals are still to be found lying not far from the coast on the Alaskan Barrens south of Point Barrow; in fact, there are many Esquimaux living to-day who used to hunt the musk ox there, and it is possible that a few individuals still exist west of the Mackenzie. In Greenland these animals have been exterminated within the last seventy years in the southern portion of their habitat on the west coast, but on the other hand they have extended their southern range on the east coast from lat. 75° to lat. 70°, and possibly still further south, owing to the disappearance of the Esquimaux on that coast line. Dr J. A. Allen takes a gloomy view with regard to the Greenland musk ox as well as the American race, but I do not agree with him upon this point, because the attacks of ships from Norway, probably limited to four or five each season and carrying four or five sportsmen, do not in reality touch their main range. These ships enter, when they can pass the ice, which is by no means certain, at a break just north of Iceland, and south of Jan Mayen, and go northward along the Liverpool coast for a short distance and then return. In reality they visit but a very small part of the musk ox range, and with the exception of an occasional exploring expedition are the only hunters that attack the musk ox. The numbers killed are usually small, and as we have shown, now that there are no Esquimaux there (they disappeared about 1870), there is little fear that their numbers are seriously reduced. In Grinnell Land and Grant Land only the Esquimaux, who are few in number, and an occasional polar expedition molest them. The case, however, is quite different in British North America. Here the musk ox between the Mackenzie and Hudson Bay are in danger of extinction.

“Formerly,” writes Dr Allen, “their chief enemies were the wolves and the Esquimaux within their general range, and the Indians along its southern and western borders. Owing to the small number of their human foes, the inroads upon the herds were usually not serious, although it was the custom of both the Esquimaux and the Indians to annihilate the small herds which they attacked, the habit of the animals of huddling together for defence till the last member of a herd was killed rendering this easy of accomplishment. The white man has, however, proved their most deadly foe, thousands of these helpless animals having been necessarily killed for the support of the various Arctic exploring expeditions which have penetrated their range during the last three-fourths of a century. The herds of Ellesmere

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Land, Grinnell Land, Grant Land, and East Greenland have suffered especially from these visitations, while along the Arctic coast of the mainland many have been killed by whalers, or by natives in their interest. In recent years enterprising sportsmen have considered their game list incomplete without the inclusion of a few musk ox heads among their trophies, either from the barren grounds of the interior or from inhospitable Ellesmere Land."

It would seem that wherever the musk ox can be reached by white men directly, or by Esquimaux or Indians employed by them, the animal will become extinct in that locality; fortunately most of its haunts north of the mainland are inaccessible to traders and whalers.

"It is doomed," continues Dr Allen, "throughout the mainland of Northern Canada unless the Canadian government takes the utmost care in restricting the killing for commercial purposes and for trophies—a difficult task in a country so sparsely inhabited. The musk ox seems, indeed, to be in a fair way, despite all practical means for its preservation, to soon share in continental North America the fate that has already overtaken the American bison. . . . The musk ox is in many ways a more attractive, interesting and picturesque animal than the bison, and should be saved in the interest of future generations of mankind. It is also the main dependence in certain districts of the Esquimaux, who rely upon it in large degree for clothing, utensils and food. . . . The Esquimaux have, however, proved incompatible neighbours, and Esquimaux and musk oxen can never live together."

Dr Allen, I think, should have qualified the latter statement by saying, "Esquimaux armed with rifles and employed by white men," because these little hunters have lived beside the musk oxen and on them for hundreds of centuries, without making any appreciable difference. But, armed with rifles, and induced by presents to kill all and sundry, they have certainly exterminated the musk ox over large areas. In Arctic Canada, where complete protection of these animals is necessary to ensure their existence, the government is again faced with an impossible task. Nothing will prevent the Indians and Esquimaux from killing them whenever encountered, but something might be done by sending police to watch the whalers and prevent them from employing natives to hunt for them. Even this will be a difficult task, as there are not sufficient police in the area of the Barrens coast line to be efficient.

BUFFALO AND MUSK OX

The American race of musk oxen were first made known to Europeans in the year 1720 by Capitaine Jérémie, who was in command of Fort Bourbon, on the west coast of Hudson's Bay, at the mouth of the Hayes River, from 1697 till 1714, when that French port was transferred to the British, and was renamed York Factory. From Fort Bourbon, which was situated approximately in lat. 57°, Jérémie made journeys northward and westward, and encountered musk oxen in the country between Churchill and Seal Rivers, between lat. 58° and 60°. His account of the country and its animals was published in Amsterdam in Bernard's "*Recueil de Voyages au Nord*," Vol. VI, of which the first edition appeared in 1720. The existence of living musk oxen in Greenland was not known until 1859, although skulls were discovered six years previously.

The skins of the musk ox are largely used in Canada for sleigh rugs, and since the disappearance of buffalo robes the price of these has greatly increased.

In 1891 the Hudson Bay Company sold 1,358 skins, which fetched up to £6 apiece. Parties of Indians are employed by the fur companies to collect these skins. The Indians soon run a herd to bay with their dogs and the whole herd is slaughtered. According to Mr Warburton Pike, dogs are not employed for hunting in summer. A band of musk ox are driven into some small lake and followed by the Indians in canoes. The musk ox seems to be a poor swimmer and falls an easy victim.

When Mr Pike wrote his interesting account of his trip to the Barren Lands, he was of opinion that the musk ox stood in little, if any, danger of impending extermination. He did not then know of the numbers of Esquimaux that hunted them in the north (their chief habitat), nor that the whalers, who have indirectly been the chief cause of destruction, would ever come there.

Musk oxen live together in herds of from fifteen to thirty during the summer months, but in winter they come together in much larger bands, and over a hundred have been seen together. It is probable that their general habits are much the same as those of other ruminants, for, during the summer and autumn the large bulls are generally found alone. According to the natives, the female only produces one calf every second year, so that the increase is not rapid. Mr Pike says that in summer their food consists almost exclusively of the leaves of small willows found growing on the Barren Grounds; but in spring and winter they eat quantities of lichens and moss, which they find by pawing away the snow after the manner

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of the caribou. It has been said that the horns are also used for clearing away the snow, but, personally, I doubt this. During the short northern summer musk oxen get into fine condition by the time their winter coat is fully developed, but by the spring they become very thin and in poor condition. They are not animals that migrate to any extent, and do not come south, like the caribou, to the wooded districts in winter, but remain on the inhospitable Barrens, generally not far from the northern coast line.

For a short distance musk oxen can run with speed, but are full of curiosity and soon wheel and face the intruder. They seem to be easily brought to bay with dogs, and turn to face them until the hunters come up. They are said to be able to climb with agility on very precipitous ground. They are by no means dangerous animals, and when wounded will seldom, if ever, charge. By nature, however, they are of a somewhat warlike disposition.

The instinct of self-preservation, doubtless due to the constant attacks of wolves, is highly developed. A young animal in an enclosure at Woburn would charge at any stranger that approached it, and two others recently captured in Greenland, which I saw in Norway, were equally ready to defend themselves. Several young musk oxen have recently been imported into Europe, and one has just been acquired by the American Zoological Society; but they do not seem to thrive in confinement and appear to be always labouring for breath in low latitudes. It is too warm, and the air of these more southern countries is not sufficiently rarefied for them. The climate of England to-day is probably much warmer than that of the early Pleistocene age when the musk ox existed here.

In unfrequented places, both in the Canadian Barrens and in Greenland, there seems to be no sport in hunting the musk ox; for, in most cases, a herd on being viewed forms a circle and stands in a menacing attitude until the hunters approach to within short range. A solid bullet, travelling at high velocity, is necessary to kill these animals, for a soft-nosed bullet opens and remains in the matted shield of hair and will not penetrate except if it strikes the legs or the region of the heart or eyes. A friend who has shot musk oxen in Greenland tells me that he fired five shots with expanding bullets at a bull behind the shoulder, and that he found all these embedded in wads of hair after he had killed the animal with a single shot from a solid pointed bullet.

Colonel Feilden, who has also killed these animals in Greenland, thinks

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they are very sheep-like in their habits. When moving, the old bulls take the lead, and when alarmed they crowd together like a flock of sheep.

Mr Thompson-Seton has proved that it is possible to go from Edmonton, via Athabasca and Great Slave Lake, to the Northern Barrens, shoot a musk ox and see something of the Barren Land caribou, and return to civilization by the same route in the same year before the ice stops canoe navigation. He did this a few years ago, but may be considered lucky in having found a musk ox bull almost the first day he went out to hunt. Others have previously tried to do the same, and have either had to winter in the north or return over the ice with dogs, an arduous undertaking.

Zoologically speaking, the musk ox is a very interesting animal, representing a genus which has no very close relatives, but from the sportsman's point of view it is a failure, and the desire of head hunters to possess its shaggy head and curiously curved horns is rather the outcome of the fact of its rarity in collections and the difficulty old-time hunters had to obtain them, rather than their intrinsic or artistic value. There is nothing more thrilling in hunting lore than Mr Warburton Pike's accounts of his advance and retreat from the land of the musk ox, and the fearful privations which he underwent to obtain his trophies and see the animals in their home. But now, any rich man can charter a powerful little ice-bumping whaler and go to Victoria Land, or the Liverpool coast of Greenland, and shoot the animals without enduring any hardships.

THE GRIZZLY & THE BLACK BEAR

K NOWN generally throughout the west and north-west as the grisly, grissly or grizzly bear, it is doubtful whether *Ursus horribilis* received its name from its grey or grizzled coat or from its fierce appearance. In the countries abutting on the Rocky Mountains it is more commonly known as "Old Ephraim," "The Silvertip" and the "Roachback."

These bears are large, heavy and thickset animals, covered in winter with a thick pelage of dull colours ranging from black, dark brown, light brown, and yellowish grey to yellowish white. The legs are nearly always much darker than the rest of the coat. The Rocky Mountain grizzlies are of various colours, and a female may have a light and an almost black cub, whilst the old Californian grizzlies are almost black. The grizzlies of Northern British Columbia and Southern Alaska are very dark and uniform in their pelage, and usually have a well pronounced grey stripe extending from the chest across the upper part of the shoulder; legs almost black. They have five well-developed toes on each foot, with long curved claws. The hind feet are plantigrade, with not such long claws as on the fore feet. The tail is short. The dentition is as follows, with premolars sometimes wanting:

$$\text{Inc. } \frac{3-3}{3-3}; \text{ can. } \frac{1-1}{1-1}; \text{ prem. } \frac{4-4}{4-4}; \text{ mol. } \frac{2-2}{3-3}=42$$

The average grizzly bear male stands about $3\frac{1}{2}$ to 4 feet at the shoulder—the female somewhat less in height—and from 6 to 7 feet in length from the nose to the tip of the tail. Pegged out skins are often 1 to $2\frac{1}{2}$ feet longer than this. Of course, many males of true grizzlies exceed this in size. Lewis and Clark mention one killed by them in Montana as 9 feet from the nose to the extreme end of tail, and one that I saw in Wyoming in 1886 must have exceeded these measurements.

There are several records of Rocky Mountain grizzlies of over 10 feet, and a skin exhibited at the Chicago Exhibition from Montana was said to have reached the colossal size of $12\frac{1}{2}$ to 13 feet. There is little doubt that the specimen was subjected to artificial stretching. The hind foot, from heel to point of claws, measures about 10 inches, and one of 12 inches would be considered a very large bear.

It is certain that the great black Californian grizzlies of the past

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weighed as much as 1,000 lb., whilst monsters of 1,500 lb. are doubtful; 600 lb. may be considered the average weight of a fine male, and 500 lb. for females. Colonel Pickett, a noted Wyoming grizzly hunter, in a letter to G. O. Shields, says that of forty grizzlies he actually weighed the heaviest scaled less than 800 lb. There was a very large grizzly in the Washington Zoological Gardens which weighed in September, 1894, 730 lb., and in later years he was considered to be much heavier.

The heaviest weight for one of these bears that is considered authentic is 1,153 lb. This is verified by G. O. Shields and is given as the weight of a male that lived for eighteen years in Union Park, Chicago, where the animal was fed by visitors until he became so fat that he could only crawl about. His weight was finally estimated at 2,000 lb. but this was probably an exaggeration.

At present it does not seem possible to separate all the different local races of the grizzly bear, and many good naturalists are not disposed to accept all the various local sub-species, which only differ in trifling cranial measurements. Dr Merriam, who has so long and carefully studied the species, will doubtless give us his conclusions at an early date; but at present the confusion seems complete, and no one who has seen a large series of bear skins and examined the claws can possibly accept the white and dark clawed races, for white and dark clawed bears occur in nearly all known areas.

To name the bears of Kadiak, Yakutat, Pavlof, Sitka (i.e. Baranof), Admiralty Island, Montague Island, etc., is too great a strain on our credulity and too much like splitting hairs. Doubtless all these bears, if a large series were obtained, do differ in very trifling particulars, but they are all without doubt direct descendants of an ancestral grizzly which by isolation has become very slightly specialized. Under any circumstance, to describe them as species is ridiculous. Even if they are accepted, which at present appears doubtful, they are only sub-species. Mr Foster, of Victoria, showed me in 1908 a large series of the skulls of grizzlies from Alaska, the Alaskan Islands, British Columbia and the main range of the Rockies, and having mixed these said that it was not possible to assign them to their proper localities without reference to the labels. The variation in individual skulls were as constant as in those from the Alaskan Peninsula, though, of course, the size of Alaskan bears was on an average very much greater than those from the eastern side of the Rocky Mountains. I confess that I am quite unable to understand why Dr Merriam makes

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the bear of Montague Island (*Ursus sheldoni*) and that of the Kenai Peninsula (*Ursus kenaiensis*) into species, whilst the bear of Norton Sound, Alaska, is described as a sub-species under the name of *U. h. alascensis*. Again, the Kodiak bear, *Ursus middendorffi*, and the Yakutat bear, *Ursus dalli*, were considered species, whilst the bear of Pavlof Bay, Alaskan Peninsula, is designated as a humble sub-species under the name of *U. dalli gyas*. There seem to be far too many kinds of bear in Alaska.

Dr C. Hunt Merriam classes the North American bears as follows into five specific groups.

1. The Polar Bear.
2. The Black Bear.
3. The Grizzly Bear.
4. The Sitka Bear.
5. The Kodiak or Alaskan Peninsula Bear.

These five groups he considers are unequally related.

If we accept the whole of the named varieties of the grizzly bear they should, I think, be grouped after the type under the following list of sub-species.

1. The Grizzly Bear, *Ursus horribilis*. Ord. description as given.

Range: Montana, Wyoming, and east side of the Rockies throughout British Columbia and as far north as Southern Alaska. The bears of the Skeena and the Stickine seem to be identical with those of the main range of the Rockies and Kootenay, but are more uniform in the colour of the pelage, and darker, with a well pronounced grey shoulder stripe. The skull of a fine male I killed on the Stickine is identical with that of a Wyoming grizzly.

2. The Alaskan Grizzly, *Ursus horribilis alascensis* (Merriam).

Skull larger. It is said to possess cranial and dental peculiarities.

Range: Norton Sound, Alaska.

3. Sonoran Grizzly, *Ursus horribilis horreus* (Baird).

The frontal region of the skull is not elevated at or behind the eye sockets as in true *U. horribilis*, but hollowed between them. A very doubtful sub-species.

Range: Southern Rocky Mountains and outlying peaks and ranges of Colorado and Arizona.

4. Californian Grizzly, *Ursus horribilis californicus* (Merriam).

Larger than the last named, with longer ears.

Range: Southern California, and now said to be approaching extinction.

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5. Kadiak Grizzly, *Ursus horribilis middendorffi* (Merriam).

The largest of the American bears, often exceeding 10 feet in length, with skull of 15 inches in length. Skull similar to true *Ursus horribilis*, but said to differ in many points. The general structure, according to Dr Merriam, can be distinguished from either black or grizzly bears.

Range: Kadiak Island; the bears of Sitka (Baranof Island), Admiralty Island, Montague Island, and the adjacent Alaskan peninsula scarcely differ from the Kadiak bear, though those of the islands are undoubtedly smaller. Grizzlies quite as large as those of Kadiak have been killed on the Alaskan Peninsula.

6. Yakutat Grizzly, *Ursus horribilis dalli* (Merriam).

The frontal region of the skull is said to be flattened instead of arched.

Range: Yakutat Bay, Alaska.

7. Pavlof Grizzly, *Ursus horribilis gyas* (Merriam).

Said to be larger than the last named.

Range: Pavlof Bay, Alaskan Peninsula.

8. Sitka Bear, *Ursus horribilis sitkensis*.

Teeth said to be nearly allied to the black bear and smaller than the Yakutat bear.

Range: Sitka coast region, Baranof, Admiralty Island and probably Chichagof Island.

9. Sheldon's Grizzly, *Ursus horribilis sheldoni* (Merriam).

Said to be allied to *Ursus kenaiensis* (*U. h. alascensis*) from which it is said to differ in having the condyle of the jaw more exerted (that of *kenaiensis* is said to be sessile). The skull is also higher and more massive. It is shorter and broader than skulls of *gyas*, *middendorffi* and *dalli*.

Range: Montague Island, Alaska.

10. Kidder's Grizzly, *Ursus horribilis kidderi* (Merriam).

Allied to the Yakutat bear, but smaller and with smaller teeth.

Range: Alaskan Peninsula.

I think it will eventually be accepted that all these Alaskan grizzlies are one and the same animal, for specimens, especially those on the peninsula itself, are subject to great variation in size. On examining six large skins, five of which came from various parts of the peninsula and one from Kadiak, all brought to London in 1911, I should say that it was a bold man who could indicate whether they belonged to *kidderi*, *gyas*, *alascensis*, *middendorffi*, or *dalli*.

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11. The Barren-ground Grizzly, *Ursus horribilis richardsoni*.

A small grizzly with pelage much the same as the typical race.

Range: From North Labrador through the northern barren lands to the east side of the Mackenzie River. Nearly extinct in Labrador, but commoner to the south of Victoria Land and west of Fort Churchill.

[*Ursus horræus* (Baird) seems in no way to differ from *Ursus horribilis*.]

The range of the grizzly bear is now becoming restricted to the northwest of the American continent. At the beginning of the last century the grizzly was undoubtedly common in Manitoba about the Red River, and also existed in North Dakota. In 1820 Richardson saw a grizzly killed at Carlton House on the Saskatchewan. Apparently at this time it was not known to the Indians further to the east. He gives its range at this date as the "Rocky Mountains and plains lying to the eastward of them as far as latitude 61°, and perhaps still further north."

Until 1886 grizzlies were common in Colorado, very common in Wyoming and Montana and throughout British Columbia. Even to-day they are still fairly numerous in British Columbia, but only in very rough country where man seldom comes. They are still abundant about the Skeena and the Stickine Rivers, where a dozen may easily be seen by anyone having the patience to wait amidst the everlasting rain and watch the salmon-choked rivers and streams. In the 'eighties they were very common in the Rocky Mountains of Wyoming, and after a fall of fresh snow the whole mountain sides about Cloud Peak in the Big Horns appeared crossed and intercrossed with their tracks. Yet even at this date the grizzly was becoming nocturnal and crepuscular in its habits.

A little earlier it was common to see grizzlies, especially in spring, out on the open prairies and about the foothills and bad-lands lying below the mountains. The cowboys there often shot them with their revolvers, or indulged in the more dangerous game of lassoing them and tying them up with their ropes. In the 'fifties and 'sixties it was common to see a dozen in a day's march, and earlier old writers speak of finding them in droves alongside the buffalo. But now they have been so hunted that they are very rare in Colorado and scarce in Wyoming, except about the Yellowstone Park. Mr Russell, the admirable artist of western life, tells me they are still fairly common in the high mountains in Montana, some seventy miles south of the Canadian border. They are, however, still quite numerous throughout the northern part of the main range of the Rockies, where railways and settlers have not yet penetrated, and when

GRIZZLY BEAR (*Ursus horribilis*)

PLATE CX.



THE GRIZZLY AND BLACK BEAR

only a few mining and fur trappers' camps as yet marked the northward progress of civilized man.

A friend who took up land on the Upper Skeena in 1906, before the Northern Railway was begun, tells me he has seen as many as twelve in a day, but here, as elsewhere, man will soon invade their territory and they will be shot or driven away. All about the confluents of the great Yukon River, and from here west to the coast, the grizzly is still very abundant, since, from Northern British Columbia northward, the coast and interior Indians seldom kill them. Firstly, because they are difficult to kill and become dangerous if wounded, and secondly, because their skins are of little value and not worth the great labour that is involved in properly curing them. A Liard River Indian told me he had seen thousands of grizzlies in his life and had only killed one, and that in self-defence. This bear, a fine one of 7 feet, he had taken to Telegraph Creek, and had received eight dollars for his trouble. He vowed he would never skin another.

From the general point of view we must regard all these coast and island bears of Alaska as merely local forms of the grizzly. Most of the island forms are comparatively scarce, but on the peninsula the immense bears found there are still fairly numerous in spite of the numbers of shooters, both red and white, which attack them in May when they emerge from their winter sleep. The numbers that may be killed are now restricted, so that it is likely that, like the giant moose, they will survive for many years to come without appreciable diminution. There are a few, but very large, grizzlies in Central British Columbia, and I have seen some splendid specimens from Chilcotin, Kootenay and Northern Lillooet. Two of these, seen in a fur store in Vancouver, were 9 feet in length and identical in colour with the Wyoming "silvertip."

The grizzly bear is a great rough brute and in moments of ease heavy and lumbering, but in times of excitement very quick and powerful. Those who only know "Old Ephraim" in a cage could hardly guess how sharp he can be in his movements when he is either angry or frightened. There is little doubt that for some distance he can stride and run as fast as a horse. His strength is very great. Nothing lives in the west but the cougar that he cannot kill and carry away, and his power of moving immense logs that have been placed to hide a "cache" of meat or provisions is amazing. In the old days hunters constantly spoke of his courage and ferocity, and there is little doubt that the man who was only armed with a muzzle loader of little power had a stout heart when he dared to

THE GUN AT HOME AND ABROAD

attack the grizzly in the open. The courage, ferocity and strength of this bear have now for the most part given place to slyness and cunning. The least taint or sight of man is sufficient to send him flying to the nearest cover if he happens to be in the open, and the male never stops to fight unless he is wounded, or the female unless she has cubs. Mr Clifford Little, who has had much experience with grizzlies both in British Columbia and Alaska, told me that he spied a grizzly one day walking along a ridge about a mile and a half away in the Skoot Mountains. He was in the open at the moment, but stooped and commenced to crawl so as to reach some cover a little ahead. As he essayed the manoeuvre with care, the bear suddenly stood up, and although he was lying quite still it saw him at once and beat a hasty retreat to the woods. This shows that the grizzly has, when he likes to use his eyes, as good sight as any deer. His powers of scent are also superb, and he can smell man or a dead carcass at great distances. Like the fox, he makes large circles round any dead thing he wishes to approach, and so greatly obviates the chance of being surprised by any man who may be watching the same as a bait. I once spent two wretched nights in a tree over a carcass of a wapiti I had shot, and then found in the morning that three grizzlies had circled round my perch for hours without ever coming within 200 yards of the bait. The next night I did not watch, and the bears nearly finished the deer.

There is no disputing the fact that the grizzly bear of to-day is not the grizzly of the story books of our youth. There is little doubt that he was a formidable beast and is, even with the powerful rifles we now possess, by no means easy to kill. In fact, he is one of the toughest brutes to knock over with a single shot that exist, but that he is really dangerous, except under very unusual circumstances, I do not believe. Those books in which the grizzly invariably charges are usually full of—let us say in kindly spirit—imagination. This bear, like all others, chooses the line of least resistance, and, being dazed by a shot and not having located the marksman, is just as likely to run in his direction as any other. It is, therefore, most unwise to fire at a grizzly when the animal is on a hillside above the shooter, as it is nearly sure to come straight down hill in its wounded state, and will perhaps attack him in its dying fury.

Even so long ago as the 'sixties, Bret Harte correctly summarized the character of the grizzly in the lines "Coward of Heroic Size," etc., and that was when the old black grizzlies of California were of immense bulk and real ferocity. His nature is not naturally aggressive to man. He is, in fact,

THE GRIZZLY AND BLACK BEAR

for the most part a harmless vegetarian, who likes to vary his diet with an occasional dinner of meat, whether found or killed. For the greater part of his life he rambles in the woods or amongst the crags digging up roots, feasting on berries, grass or salmon bush, or tearing old stumps to pieces to reach the insects, grubs or ants they hide. In his flesh diet his favourite food is the Arctic vole (*microtus*), which he digs out with his powerful claws. He catches the small animal with dexterity, and after crushing the skull, swallows the body whole. In grizzly haunts it is common to see large spaces that have been torn up by the bears in summer when searching for voles, and this is particularly the case in its northern range. I have seen an extent of two acres in Cassiar so excavated that it looked as if men had been at work with spades for some considerable time. In spring, voles, grass and salmon berry are the principal food of the grizzly on all the islands of the North Pacific. In the autumn, as soon as the salmon begin to run, the grizzlies descend from the high mountains and live in the dense brakes of willow, salmon berry and devil's club alongside the rivers. In these they make regular roads to the river edges, where they hunt for salmon, living, dead or dying, and so lay on an extraordinary amount of fat to carry them through the long winter sleep.

Grizzlies and black bears do often frequent the same rivers and streams in the autumn, but more often grizzlies have regular haunts of their own where, probably from fear, the black bears do not come. The Indians say that the smaller bear is chased off by its larger cousin, and there must be some truth in this, for on the Stickine, where both species are numerous, the feeding grounds are generally separate. Only in one place (the Little Cañon), about thirty miles below Telegraph Creek, did I see the fresh tracks of both species in numbers together.

In old days grizzlies hung constantly on the flanks of the great buffalo herds, just as the wolves and coyotes did, and frequently killed young buffalo and wounded beasts. Some writers affirm that a grizzly could master and kill an old bull single-handed, but this, I think, requires confirmation which will now never be forthcoming.

At any rate, a grizzly can kill and drag for a considerable distance a full-grown steer, and this would need almost as much strength to overcome. When the buffalo went away, grizzlies became confirmed cattle and horse killers, and this made them unpopular, so that the habit in some way contributed to their destruction. They certainly kill a large number of young deer and wapiti, and in their northern range young and cow moose

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are often attacked. They have more than once been found feasting on the carcasses of adult bull moose, but this does not necessarily mean that they have themselves killed them. More than likely a pack of wolves or the shot of a hunter has been the cause of death, and the grizzly has found the carcass. All the Indians of the Stickine and the Liard agree that the grizzly in November, after the salmon run is past, go to crags and hunt the white goats. After moving the latter off the rocks, the grizzly is able to run them down in the open or in the forests. This shows that they are possessed of considerable fleetness of foot.

One feeding habit of the grizzly I have not seen mentioned by any writer, and for information regarding it I am indebted to Captain Conover, who has lived for the past nine years in the very home of the grizzly on the Stickine, Alaska. It is that the grizzly continues to roam the forests until Christmas, at least three weeks or a month after the black bear has "holed up." If by chance the large bear finds one of his smaller cousins in his retreat he will dig him out, kill and devour him. Captain Conover has had ample proof of this, having on three occasions found the mangled remains of black bears, which could only have been dug out and devoured by grizzly bears. The skin of the last of these he possesses, having arrived on the spot where the murder took place, close to his cabin, shortly after the grizzly had retreated. The black bear had made a bit of a struggle, but had been overpowered, and the murderer had eaten out the whole of the centre of the back, tearing a space in the skin about two feet broad.

Like most other mammals, the grizzly bear limits its local range to the food supply within a certain area. Where the necessities of life are abundant it does not travel far, but keeps the whole year round to a range that may not exceed twenty-five miles in diameter. In days gone by, when it followed the buffalo, it is reasonable to assume that it travelled great distances with the moving herds, but now it keeps within certain limits where there is dense cover of broken crags of an inaccessible nature. Mr W. H. Wright, who has made a special study of this animal and the black bear, says:

"The grizzly will live his life in a restricted area. He will go but a few miles in any direction if there is food at hand, but he will seek the food he wants if it is twenty miles away. A grizzly, however, nearly always selects a range where he will not have to travel very far to feed."

The grizzly has disappeared from the plains and is now only found

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in limited numbers in the most inaccessible mountains and forests; and with the increase of railways penetrating the greater part of its central and southern haunts the great bear will soon vanish from all its old homes south and east of British Columbia. In the last named and in Alaska it is likely to survive for many years to come unless the railways, already spoken of, to the north lands become an accomplished fact.

The home of the grizzly bear is high uplands interspersed with rocky crags or dense forest. It only becomes a frequenter of open spaces at certain seasons when various vegetable and animal life is found on hillsides and river bottoms, and even then never goes very far from dense cover to which it can easily retreat.

Dr Hornaday says that this bear utters several sounds indicative of fear, pain and anger. A fighting bear says "Aw—aw—aw"; in alarm "woof! woof! woof!" whilst in distress it calls "Ew—wow—oo—oo—oof." The cub's call to the mother is "Row! Row!"

Captain Conover has told me that the only time he has seen grizzlies charge is when accompanied by their cubs, and that he has been charged three times in one day by different females. If the female is near when the cub calls out, she will charge a man at once, but very rarely charges home. At first, when wandering in the woods in spring, he shot several females that charged him, thinking that he must do so to save his life. But afterwards he found that by standing perfectly still the female only charged to within a few yards and then stopped, growled, and after sniffing about for a moment or two, beat a hasty retreat. For the last five years he told me he had been charged by dozens of anxious mothers, but by remaining perfectly still they never molested him, but always retired after this demonstration. I think it must require unusual nerve to be charged to within a few yards by an angry grizzly and not use the rifle, and few men would exercise such wonderful restraint, because there are numerous instances where female grizzlies have charged home and killed their man.

In 1908 a ship's engineer landed on Baranof Island to shoot a deer for meat. He wandered up above the timber line and killed a good buck, which he put on his back and made haste to return to his ship. Whilst passing through a thicket of devil's club and salmon berry he suddenly heard the "woof" of an angry grizzly, and even before he had time to fling the deer from his back the bear was upon him and flung him down. A cub then commenced to cry in the thicket close at hand, and the furious mother attacked the prostrate man and bit him all over the legs and body. After a while

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she left her victim, but only for a short distance, and each time the cub called she returned and savaged the man, who was so badly wounded that he was unable to reach his rifle. The bear returned and bit the man again and again, and though he managed to save his head and neck he was so mangled that he fainted. On recovering his senses he commenced to crawl on his hands and knees towards the beach, where he was found in a terrible condition two days later by one of his comrades. Mr Bronson, the American customs officer of Wrangel Land, who told me these facts, and who interviewed the poor fellow in Sitka hospital, said he had sixty-two large wounds on his body and limbs, yet being a man of powerful constitution he completely recovered in two months. These island bears are said to have a worse temper than those of the mainland, and the Indians of both places certainly hold them in considerable fear.

The European brown and the black bear both mate in the spring, but the grizzly is said not to pair until midsummer. This, at any rate, is the case with those that have been kept in confinement. The sexes remain together for a month or two and then separate, and they are said to be faithful to one another during this short period.

The gestation is said to last about six months and the cubs are generally produced in the winter retreat in late December or early January. A pair mated in July in Central Park Zoo, and the female produced a cub in January, and another pair at San Francisco united in June, and the female had two cubs on December 23. The mother is very secretive and jealous of her offspring, and if much observed she will kill them. In a wild state she suckles them for two months before she brings them out, then she soon teaches them to eat vegetable and animal food.

Compared to the size of the adults, the cubs at birth are very small, seldom exceeding $1\frac{1}{2}$ to 2 lb. in weight. The young grow rapidly, and in two months are as much as 12 to 15 lb. The usual number is two, sometimes three, and very rarely four. Generally they pass the summer with the mother, and the male only joins the party at the breeding season, but where two families have probably united, a little herd of six to eight have been seen together.

The young shift for themselves by winter and are supposed to be adult and breed in the third year.

Most of the grizzly's habits are similar to those of the black bear, and are very much the same as the brown bear of Europe (which is nothing but a deteriorated grizzly) and the snow or red bear of Cashmir. All are lovers



Photo by]

[Hy. Dixon & Son.

GRIZZLY BEAR.

Adult male. Length 7 feet 4 inches.

Shot on Stikine River, B.C., by Mr J. G. Millais, September, 1908.

PLATE CXI.

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of twilight and travel about much at night and dawn, sleeping for the greater part of the day in dense thickets or amongst rocks. In spring they are often on the move all day. In the Alaskan Islands they keep high up in the mountains in spring as soon as they emerge, and like to feed on grass on the bare hillsides, from which they have a good view all round. This is also the case in Cassiar and the main ranges at the headwaters of the Yukon and its confluent, but in more civilized parts, even in spring, the grizzly does not go far from the dense timber, but just potters about on the edges of snow slides and green spaces from which it can retreat into any timber close at hand.

The black bear and its cubs are quite at home in the trees, and obtain much of their food there, especially in the autumn, but only the cubs of the grizzly will climb, for the adults seem to prefer to keep on the ground at all times.

The grizzly is more carnivorous than the black bear, and will search for and kill large numbers of ground-squirrels, gophers, voles, whilst an occasional deer, white goat and young moose or wapiti falls a victim to its activity. Any freshly killed or even tainted carcass is also considered a delicacy, and their powers of finding them are remarkable. Of vegetable food it likes grass, salmon-berry, prairie-turnip, and skunk-cabbage, and has an especial liking for trout and salmon, as well as all kinds of fruit, consuming enormous quantities of wild cherry, huckleberry and raspberries. I have also seen a place in Cassiar where grizzlies have eaten both leaves and fruit of wild strawberries. Many roots and insects and grubs are also eaten. They use the claws to pick up small objects and eat like a Chinaman using chop-sticks.

The grizzly becomes enormously fat in autumn, especially after a prolonged diet of salmon, and will roam the woods and hillsides in search of food long after the black bear has retired for the winter. Captain Conover is of opinion that grizzlies do not hole up before Christmas, and agrees with Mr Wright that their time of emerging in spring is a month to six weeks later than the black bear. They sleep very deeply during hibernation, but can easily be aroused soon after entering their dens. Most bears, however, are very diverse in character in this respect, some being easily awakened whilst others cannot be roused without the application of fire or logs thrust into their dens.

All bears have regular roads, which they make on the hillsides, through the woods and amongst the river bottoms, and these they use for years

THE GUN AT HOME AND ABROAD

unless frequently disturbed. If the road is blocked by fallen trees they make a fresh trail round it and do not repair or cut a way through as rodents do.

The speed of the grizzly is considerable and can be kept up for a long distance, and it takes a good horse to come up with one travelling at its best pace, wherefore this bear finds it easy to catch and kill ponies and cattle in the spring when they are in poor condition. A single blow from the paw is said to disable a horse. It is also a good swimmer, but does not seem to take to water so readily as the black bear. Its tenacity of life is very great, and a bullet that would knock down a lion or tiger is not sufficient to render a grizzly *hors de combat*. Even with modern high power rifles the ball must be placed in the head, neck, heart or spine to bring it down, and this bear is the only animal I have seen that will walk away if shot through the kidneys. If hit in this place any other animal drops at once.

All the early travellers, from the days of Lewis and Clark, agree that the grizzly had little fear of man, but to-day all this is altered, and the great bear is now a shy and nervous creature which seems to fear man more than anything else and will seldom attack him even when brought face to face. We have an interesting instance of the attitude of mind of the grizzly towards man when that excellent hunter, Mr Charles Sheldon, actually collided by accident with a large grizzly on Montague Island (see "The Wilderness of the North Pacific Coast Islands," p. 99). The bear knocked the hunter over and then ran for its life without stopping to fight. He had smelt the man and that was enough.

The grizzly and the lion have both learnt the inevitable lesson that man is the master, and now no longer stop to fight like the African buffalo and the elephant, but will only do so when wounded and cornered.

I shall never forget my first sight of a grizzly in his natural home, and what a grizzly he was. I think few larger have ever been seen in the Rockies. I was riding along a trail in the Big Horns with my hunter, Rattlesnake Jack, when I observed two ravens flying and croaking over some object on the edge of a small park. In a moment something moved, and I called Jack's attention to it. His answer was to immediately turn his horse, whilst I did the same.

"Did you see him?" he observed, "the biggest grizzly on earth."

We at once called up my brother Geoff, who was with the pack train behind and then got off our horses and stalked carefully to the edge of some fallen timber where a good view could be obtained.

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About a hundred yards distant was an immense grizzly in the act of unburying a dead mule deer buck which was half covered with earth and leaves. The bear was evidently of unusual size and strength for we saw him pick up the buck, which was a full grown male, and throw it to one side as if it was a rabbit. He then proceeded to remove the entrails and to bite off one of the haunches. As I was the guest, I was given the first shot and, aiming carefully, I fired, and at once saw the grizzly lying on its back emitting roars of pain and rage. Jack and Geoff then fired and one of the bullets told again.

Our hunter here made a bad mistake and said, "keep down now or he will come for us," which, in our ignorance, we at once proceeded to do. We watched the titanic struggle for two or three minutes, the bear rolling, roaring and biting at the wounded parts. After a minute it rose, and going up to a small ash commenced to bite and tear at the bark.

"He's going to die now," said Jack, but die he certainly did not. Suddenly he turned in our direction and, after one quick glance, charged straight. Whether he was actually charging or not I do not know to this day, but he certainly came in a bee-line within twelve yards of our position, and was then hidden by an immense windfall of fallen trees at least six feet high. I will give Jack the credit by saying he was perfectly ready whilst my brother and I were fumbling for fresh cartridges. The timber stopped the charge and we could only see the line of the bear's back as he jumped off at right angles. The next view we had of him was racing over the open about 100 yards to our right, and we then saluted him with the whole battery. One shot again hit him and he fell, only to rise again at once and continue his flight. After a short pause we followed the trail, now well sprinkled with blood, and took it to the edge of a vast willow swamp on the edge of which the bear had again fallen and rolled. The bear had retreated in this dense cover and it was not likely we should meet it except at close quarters, when there was sure to be trouble.

"Are you game to go in after him, boys?" suggested the valiant Jack.

Of course we accepted the challenge and entered the thicket with, I must confess, some misgiving. We tracked the bear in all its various windings, and every time a cottontail rabbit or a deer moved nearly shot one another, but after half an hour's suspense the trail was lost and we returned to the horses in melancholy mood.

We camped close by and every evening I went to the swamp in the hope of seeing ravens hovering over the carcass, but, alas, without success.

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One evening two ravens appeared and dived about the air over a certain spot. I made my way to it and found a skeleton of a female white-tail that had been dead about two months. That was the end of a very painful episode which lived in my memory for years afterwards. Had we only kept on shooting, when the bear first fell, I am sure we should have killed him. That he was dead somewhere in the swamp was doubtless true, but without a dog he could not have been found.

The grizzly bear is a tough animal and I resolved that if I ever met another I would not spare the cartridges. Twenty-two years passed away before I met another, and then I had a better rifle and had more experience of wild animals.

Down in the rain-soaked valley of the Stickine many grizzlies and black bears come to haunt the streams that flow into the great northern river in the autumn. Here the hump-backed salmon are in abundance and easily caught as they wallow in a dying state in the shallows.

I was accompanied by a Liard River Indian and a Thaltan Indian who knew the river and where bears were to be found. We hunted the first day without success. On the second day we reached a side stream which was evidently a fine bear resort, for the whole place was trampled with the trails of many black bears and two large grizzlies.

I did not see a grizzly but had a shot at a fine old male black bear which I killed. The next day we reached the little cañon at three in the afternoon, just as it began to snow heavily. In fact, it never ceases to rain or to snow in this inhospitable region. We landed on the edge of a dense forest of giant Menzies's spruce trees and, leaving one Indian to make camp, Albert, the Liard Indian, and I wandered slowly up the stream, which here comes out of the great mountains into the main Stickine. We could see for a distance of 500 yards over a perfectly open flat before the little stream entered the forest jungle at the base of the main range. The scenery is here magnificent. Great woods of spruce, too dense to penetrate, clothed the river levels, and above is the stunted pine and birch region for several thousand feet, and above that the bare rocks and plateaux, ascending to seven or eight thousand feet. Not a breath of wind stirred and the snow descended in a white cloud. Far away in the gloomy recesses of the small cañon the stream disappeared, and that I knew was the length of our hunting ground, for man can scarcely penetrate the mass of fallen timber and devil's club. We had not gone far when, on the snow, we saw the fresh track of a huge grizzly. He had crossed and recrossed the stream less than an hour before our advent.

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"Let us go up to the right of the cañon," I suggested, "and hide in the timber, as he may soon come out again to hunt," a proposal Albert at once agreed to. We had only taken a few steps forward when I saw a bush violently agitated about 400 yards away on the edge of the stream, and we had hardly fallen flat on the snow when a big grizzly swung into the open and looked about him. The survey seemed satisfactory and he ran to the edge of the water and came straight towards us. At 300 yards he rose on his hind legs and I think saw us but could not clearly ascertain what we were. At 200 yards he was so unconcerned that he made a dash to the stream and struck at a salmon, which eluded his grasp. He then returned to the bank and, with a brisk business-like gait, again walked swiftly in our direction.

At 100 yards he saw us quite distinctly and I cocked the Mannlicher. He again rose on his hind legs and then again advanced in a gingerly fashion. His suspicions were now aroused and he kept pushing his nose upwards as if trying to get our wind. At seventy yards he turned sideways, as if to circle our position, and I at once fired and gave him a good shot behind the left shoulder. He turned, growled and bit at the wound and then lost his balance and turned a somersault. As he stood up again I gave him a second shot in the shoulder and he made a yawning roar of pain. As he rolled on the ground I gave him three more, all of which hit him, the last breaking one of his hind legs. He then turned and stood with his back towards me whilst I slipped in a fresh clip. After a pause he began to walk very slowly to the stream and his movements showed that death was not far off. I rose and followed him intending to kill him as soon as he gave a broadside, but he did not do so and walked on until I found that I was getting too close to be pleasant. On reaching the water, however, he turned and stood at bay and I walked up to within eight yards and then gave him a bullet in the neck, when he fell dead at once.

My other Indian now came up and it took us three hours to remove the skin. The bear was enormously fat and measured 7 feet 8 inches. It was a fine adult male, the best killed in Cassiar in 1908.

Our friends who stay at home and read the old books are apt to regard the grizzly bear with some dread and veneration, because the halo of his past achievements has not completely vanished; but the danger of shooting one was as nothing to that of the night we went through after encompassing his death. I shall never forget it and look upon that night in the Stickine forests as one of the most terrifying experiences of my life. I have been

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nearly drowned three times and have had other unpleasant adventures, such as being chased by a wounded African buffalo and lost for two days in a forest, but I think none of them quite come up to the night in question.

We were half frozen before we had got the skin of the bear removed and had returned to camp. I was very ill and suffering from bronchitis and it took us two hours to get a fire going amongst the rain-soaked timber. Albert worked away until he got the heart out of a rotten log that was fairly dry and then all was pleasant for a while. About ten o'clock a gale sprang up from the east and then the trouble began. About eleven o'clock it turned to a raging tempest and the giant spruces first began to crack and then to fall. In the course of an hour over 100 trees, about 180 feet high, had crashed to the ground close to the camp. We then huddled on the river bank overhanging the stream, and had hardly done so when a giant spruce fell right across the camp knocking down the tent and scattering the fire. Had we been there one of the Indians or I would certainly have been killed. As it was, the branches of the fallen tree struck Albert as he dodged out of the way, but fortunately without injuring him. Almost immediately another tree fell within six yards of us on the other side, and it was only by spending the rest of the night facing the bitter blast where it struck the bank that we saved our lives. All night long the trees fell in twos and threes until, at dawn, what had been a forest was now a jumble of logs. It was, indeed, a terrible experience and I was glad to leave the place and race down stream when the daylight came. The Indians were absolutely cowed and could not speak for hours afterwards. In hunting the grizzly, the bear is not always the worst danger a man has to face. The climate of the frozen north and its attendant dangers are a worse menace.

The black bear of North America, *Ursus americanus* (Pallas), seems to change little throughout its known habitat, but is considered by some naturalists to alter into other species in Louisiana and Florida. Under any circumstances the latter are only sub-species of the common race and should be known as *Ursus americanus luteolus* (Griffith), and *Ursus americanus floridanus* (Merriam).

The following are recognized by some American naturalists but, with the exception of *U. emmonsii*, they are all varieties of the common black bear, which can often be found in a single locality and should not, I think, even be recognized as sub-species.

Ursus americanus (Pallas). The typical form.

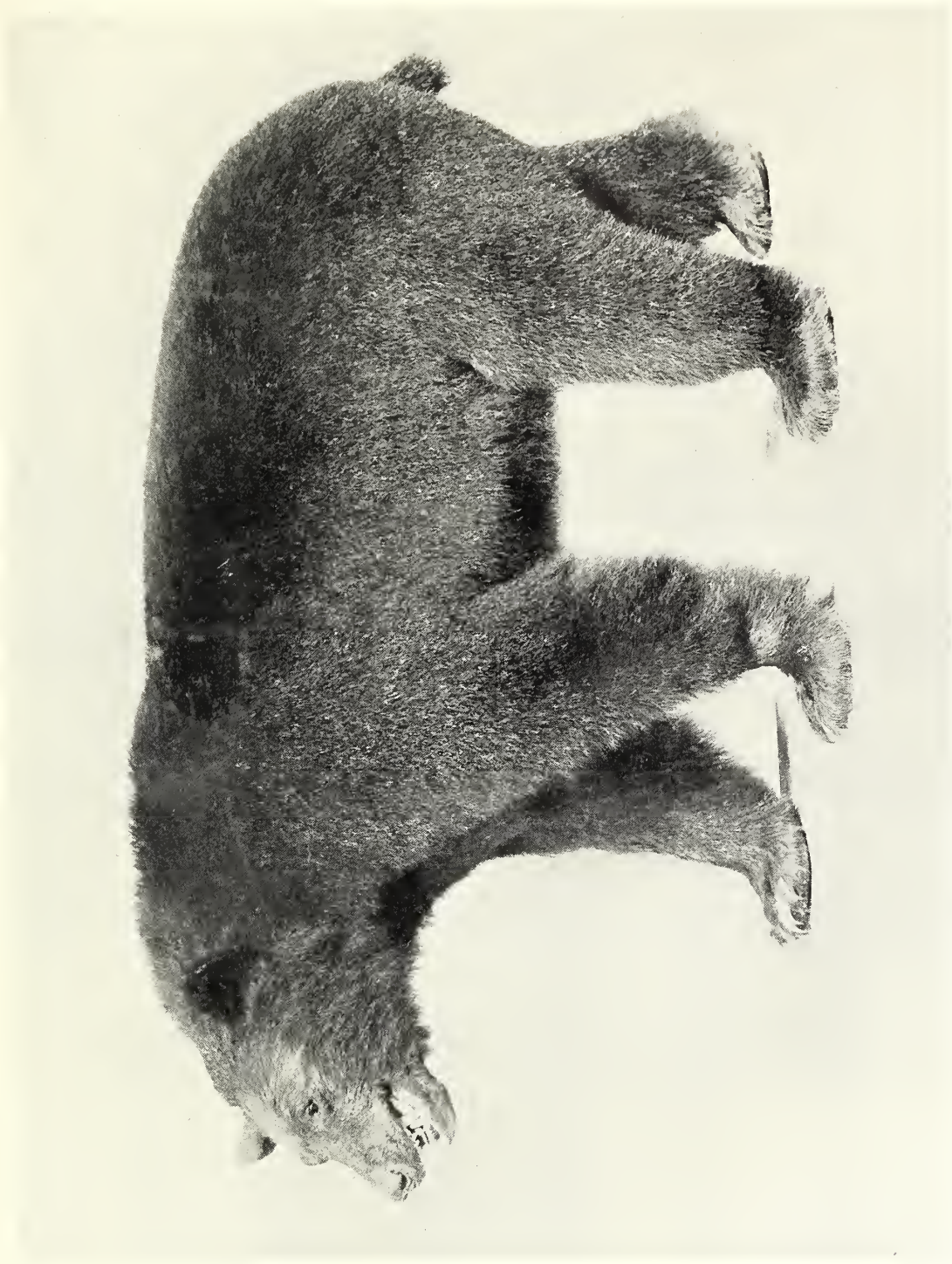


Photo by]

BLACK BEAR.

Adult male. Length 6 feet.

Shot on Stikine River, B.C., by Mr J. G. Millais, September, 1908.

[Hy. Dixon & Son.

PLATE CXII.

THE GRIZZLY AND BLACK BEAR

Ursus americanus sornborgeri (Bangs). The skull is supposed to be smaller, shorter and broader than the typical race.

Ursus americanus carlottæ (Osgood). A large race, with skull larger and teeth bigger than the typical race. Said to be glossy black.

Ursus americanus eremicus (Merriam). Said to be brown nosed, black furred and brown under furred. Slender muzzle.

Ursus americanus floridanus (Merriam). Very large and completely black.

Ursus americanus luteolus (Griffith). Large form with large teeth.

Ursus americanus altifrontalis (Elliot).

Ursus americanus hylodromus (Elliot).

Ursus americanus machetes (Elliot).

Ursus americanus emmonsii (Dall). A small brown-nosed bear, with curiously silver-tipped pelage and with white on other parts of the coat. The whole hair has a curious blue tinge. It is very rare and only found on the slopes of Mount St Elias, Alaska, and the neighbouring region. I have only seen one perfect skin and skull. A very distinct sub-species.

[*Ursus kermodei* (Hornaday). This is, I think, only a small albino race of the common black bear. The skulls in the museum at Victoria were identical with those of small black bears. Found on a small island in the Pacific, opposite Prince Rupert, and also, I think, on the mainland.]

The range of the black bear is a very wide one, embracing the greater part of the North American continent. It is common throughout Labrador except the extreme north, Newfoundland and all the eastern, western and central states. Also in nearly the whole of Canada and Arctic Canada and America, except the inhospitable barrens adjoining the Arctic Ocean, though it ranges all along the south of Hudson's Bay and often comes near to the sea at the mouth of the Mackenzie. In Alaska it is found almost to the north of the Yukon, but not in the barren area beyond tree limit towards Point Barrow. Southward it is common in Oregon and Washington, but avoids the greater part of California, and is plentiful throughout the interior of Mexico, but not on the coastal regions of the east and west. A part of Northern Florida is said to be without black bears, but this requires confirmation. It is said to occur in Costa Rica (G. Cherrie).

In spite of constant persecution and the close proximity of man the black bear holds its own. It is going fast in Newfoundland, where it is now a rare animal, comparatively speaking. Even the fur-hunting Indians, who make an especial hunt for this animal there at certain seasons, seldom

THE GUN AT HOME AND ABROAD

now kill more than two or three in a season, whereas twenty years ago twelve to twenty were the usual number. In Labrador it is still common, but not so common as in Cartwright's time, who reported seeing twenty or thirty in a single day. In Ontario and Manitoba it is numerous and is probably more abundant throughout British Columbia and Southern Alaska than in any part of the new world.

During the latter part of the nineteenth century some 14,000 black bears' skins were annually exported by the Hudson Bay and other companies, whilst it is certain that at least as many again were killed in summer, when their pelts were not worth taking. The supply of bears is always fluctuating, and whilst it is true that the species was far more abundant in former times, they are still in such numbers in out of the way places where only trappers go that they must be reckoned as one of the commonest animals in North America.

Black bears undoubtedly migrate to a certain extent, and movements have been noted in the Carolinas and elsewhere. These migrations are, of course, regulated by scarcity or abundance of food, and are at all times fitful and irregular. On the whole, however, this bear is usually as stay-at-home as the grizzly, and where food is sufficient it takes up its home in thickets or amongst rocks, and works a radius of some fifteen miles around. Like all bears, the black bear makes regular worn trails that are usually the easiest roads through the rough country in which they dwell. Bears make no effort to improve a road once made, for when it is blocked with obstacles they merely find the nearest way round. Bear trappers agree that the bear is most conservative in its methods of movement. Where a bear has passed another always follows the same route, stepping over the logs in just the same way. Bears will generally go under obstacles rather than over them, and some paths that I have seen in dense thickets in Newfoundland were so hollowed and so low that they resembled large trails made by gigantic voles. In following a wounded bear there through a dense black spruce forest, where the trees were growing so close that it was impossible to make a road without the aid of an axe, I had to crawl on my hands and knees for over a quarter of a mile without once being able to stand up; and the prospect of meeting even so harmless an animal as the black bear under such circumstances was not very pleasant.

If three bears are going along a trail, the two following always step exactly in the footprints of the leader, and they go on year after year using the same road until the tracks are deep impressions in the ground. Bears

THE GRIZZLY AND BLACK BEAR

are as clever as caribou in choosing their route from one barren or range to another, and if you follow them often, as you are obliged to do in Newfoundland, you will always find that their route is not only the easiest one but perhaps the only possible one.

On the whole the black bear is a solitary animal, although the male and female often keep together during the breeding season. Even at this time the individuals move apart as soon as they begin to feed. Such gatherings as are sometimes seen, notably in the streams when salmon are running, are rather accidental than otherwise, and in no way indicate that the species is gregarious.

The black bear emits a number of sounds indicating anger and pain. It gives a loud cough when menacing a man or another bear, and both whines and sniffs to attract attention. In pain it makes a loud bawling cry.

Black bears are fond of biting and scratching trees, and in any forest frequented by them one or two trees are noticed that have been torn by teeth or claw marks. They rise and embrace the tree, trying to bite or claw it as high as possible. Curiously enough, the highest marks on a tree or sapling are always the freshest, as if the last bear to come along wished to show his superior height. Bears will go for years to the same trees and blaze their sign mark, and in this respect exhibit certain powers of memory which cats do not do. All the cats sharpen their claws and bite trees, but seem to choose any tree of a suitable size in a moment of inclination.

These sign-posts of bears are well-known landmarks in all regions where these animals are common. Grizzlies generally leave five well worn marks whilst black bears often leave four. They are very fond of clawing aspen, birch and mountain ash, possibly because the bark is more or less soft.

The usual mating season is June or early July, and but little is known of their breeding habits. Some hunters say that the males rush along the trails in search of a female, and that once paired the two animals remain together. At first they are said to fight considerably, but even this is doubtful. That they do fight occasionally is undoubted, but as a rule they are singularly peaceable animals both in confinement and in the wild state, and only subject to sudden frenzies when things go wrong.

There is hardly anything in the way of vegetable or animal life that the black bear will not eat, for in summer and autumn he is feeding all the

THE GUN AT HOME AND ABROAD

time on roots, grass, fruit, insects, fish, carcasses and a host of other things. He likes nothing better than to find a "cache" of some white man and to scatter the contents and devour all the sugar and pork.

I thought that there was one thing a black bear would not eat, and that was brass cartridges, and there I was wrong. One day, in Newfoundland, I left a box of brass shot-gun cartridges under some stones in a cache as I left to make a short side trip into an unknown country. At the last moment I ran back and put the box about 14 feet up in the branch of a birch, as I thought it was possible a bear might break the box and scatter the contents in the river. On my return about a fortnight afterwards, the first thing I saw scattered on the ground was the contents of the cartridge box. About one-third of the brass cartridges had been chewed by three bears, and all the shot had rolled out. Their object was to reach the big grease wad over the powder, and these they had in many cases skilfully extracted. It was, indeed, a strange diet, and I have kept several of the cartridges as curious trophies. I have often wondered what would have happened if they had bitten on the cap.

When the black bear first comes out in spring it feeds much on grass, roots, crocus, Indian potato, and any small mice or carrion it can find. In Manitoba the edges of some of the lakes in summer are blocked with masses of dead mayflies to a width of 6 feet and 6 inches deep, and these dead *Ephemeridæ* are a favourite food of the black bear. A favourite spring food is the stinking arum or Indian turnip (*Arum triphyllum*), which no animal but a bear would ever touch. Bears also demolish hundreds of old stumps and rotten wood in search of ants and other insects. All along the Pacific slope there are numbers of rivers and streams all of which in September are choked with dead and dying salmon, and these form a regular food supply to the black bears, which come from all the neighbouring hills to feed upon them. In eastern rivers they devour large quantities of suckers and other spawning fish. In September and October they also eat enormous quantities of blackberries, raspberries and huckleberries. In Newfoundland, nearly all the bears that are shot are killed by being spied on the huckleberry patches by the watching Indians.

Regions devastated by fire are sown again at once with berry-bearing plants by bears passing along and distributing their excrement, which is full of seeds, on the ground. They are also very partial to the comb and grubs in the nests of bees and wasps.

In late autumn the black bear shows his skill as a climber, and invades

THE GRIZZLY AND BLACK BEAR

the high branches of oaks for the acorns and mountain ash for the ripe red berries. They not only feed up in the trees, but tear down and break quite large branches, which fall to the earth laden with fruit. So the black bear goes on in one perpetual feast till he is clothed with four inches of fat and his coat is soft and thick, and then increasing snow squalls and a falling off in the commissariat warn him that it is time to lie up for the winter.

Just before he holes up, the black bear, when he finds food becoming scarce, will break into sheep and pig pens and kill stock, and Mr Thompson-Seton relates an instance of cannibalism on the authority of George Cranford, the half-breed hunter of Mattawa. This shows that the black bear will also do the same thing as the grizzly in hard times. Females are said to den before the males, and when the woods are deeply clothed with heavy snow no black bear tracks are to be found. The retreat is often in the hollow of an old pine, or in and under a large rock. Here the bear prepares a warm couch of moss and closes the entrance before going to sleep nowadays.

Few men, I think, share the opinion of the ancients on the subject of bear flesh. Doubtless, a young bear fed on leaves and berries is just palatable, but after a diet of fish an adult black bear is oily and disagreeable, whilst the flesh of a grizzly which I tried to eat was revolting and scarcely better than an old cormorant. Even dogs will hardly eat some bear flesh.

As to the fierceness of the animal, all competent authorities are now agreed that it is practically non-existent. I have met three Indians, one in Newfoundland and two in Cassiar, that had all been somewhat badly mauled, but in each case the men admitted that the accidents were entirely due to their own carelessness.

Reuben Lewis, the head chief of the Newfoundland Micmacs, shot at and wounded a large male black bear near Burnt Hill, Gander River, a few years ago. After tracking it a short distance he came on the bear lying down with its paws embracing its head. He walked up to the beast with an unloaded rifle and gave it a kick to see if it was dead. The bear at once sprang up and seized him by the leg, at the same time throwing him to the ground and flinging his rifle to a distance. By chance only Stephen Jeddore, another Indian, was close at hand, and came to Reuben's assistance, when, after some trouble, he got a clear shot and finished the bear. Reuben was very badly bitten in both legs and it was several months before he recovered. He will bear the marks of the struggle for life. Two Thaltan Indians, mauled by black bears, in both cases shot at bears running

THE GUN AT HOME AND ABROAD

on the hillside above them, and the beast in its dying agonies rolled to the feet of the hunters and then jumped up and seized them. In one case the bear died in a few minutes, and in the other a second Indian gallantly came to the rescue and killed the animal with his knife.

A white man, a fisherman of Fortune Bay, met a large black bear on the beach some years ago. The bear had been killing sheep on an island close by and so his death was much desired. The man knocked the bear over with a single shot, and going up to it and finding it was still alive he commenced to reload his rifle, when the bear rose and attacked him. The man was found to be horribly lacerated and dead when discovered a few days afterwards.

There is, too, the famous case of the Red Deer River bear, which, a few years ago, swam a river and made an unprovoked attack on three men belonging to a lumber camp. Two of them ran to the shelter of the log hut, but the third, having an injured leg, was caught by the bear and disembowelled outside the hut. One of the men in the house then seized a rifle and shot the bear, who was in the very act of eating the man alive. The unfortunate fellow died in a few minutes. At first this bear was always considered to be a black bear, but close inquiries by expert witnesses seem to point to the fact that the bear was a grizzly that had wandered down into Manitoba from the north.

It will be seen from the above that the black bear will on rare occasions fight when his opponent is close alongside, and that all the accidents that have happened would, in nearly every case, have been avoided by firing another cartridge. It is never safe to go right up to even so harmless a creature as a deer, and if due care is taken with the black bear it is never aggressive.

Black bears being numerous are easy to kill and to find. They are harmless and interesting creatures, but should never be shot unless the hunter wishes to add a couple to his collection, and then only in early spring and late autumn when the pelage is good.

I had the good fortune, one day in September, 1908, to see a fine male in the act of fishing. We came to a little branch river flowing into the Stickine, and thinking a black bear or a grizzly might be there I carefully made a detour and crawled up to a small mound that overlooked the pools that were swarming with hump-backed salmon. It was snowing, as usual, and I could not see very far in the gloom. Presently my eyes became accustomed to the light, and I saw in the middle of the stream a



Photo by]

POLAR BEAR ABOUT TO RETREAT.

[Mr C. V. A. Peel.



Photo by]

POLAR BEAR AFTER FEEDING AND ROLLING ON THE
CARCASS OF A SEAL.

[Mr C. V. A. Peel.

PLATE CXIII.

THE GRIZZLY AND BLACK BEAR

round thing with two jet black tufts moving from side to side about 100 yards away. I raised myself slightly to get a better view, and at once the black object showed itself to be the head of a large black bear. Suddenly up went a great paw and something white flashed for a moment as the bear attempted to throw out a salmon towards the bank, but he missed. In moving to get into a shooting position, the sharp eyes of the bear detected me, and in a moment a fearful commotion arose in the water as it plunged through the water to the further bank. Here the bear entered some bushes, where a snap shot at its retreating quarters failed. But I had my eye on a wide space some twenty yards further on, and as the bear crossed the opening at full speed I got him nicely with the second shot right through the heart. He gave a bawling cry like a child in pain, staggered forward and fell dead. This proved to be a fine male of 6 feet in length and was in splendid coat.

The polar bear inhabits all the Arctic regions above the continent of North America. Owing to the number of hunters it is not now so common as it used to be between Point Barrow and Hudson's Bay. Moreover, the whalers, Indians and Esquimaux are better armed. Polar bears sometimes wander a little way into the barrens, but never very far from the sea coast, even when it is blocked with ice. A few range south along the Labrador coast in winter and spring, and retreat with the movement of the ice northwards. Formerly this bear was quite common as far south as Cartwright, and many stayed all the summer hunting the adjacent islands for birds and eggs, but now they are extinct as residents, and only an occasional one is killed by the Newfoundland sealers on the ice to the north of the Straits of Belle Isle.

The habits and sport relating to this animal are detailed in the European section of this work, so we need not further refer to them. No sportsman would go to the Arctic coast of America in search of polar bears only, because they can be obtained more easily on the east coast of Greenland and off Franz Joseph Land; but specimens may be secured in North America if the hunter is lucky, whilst a hunt is in progress for caribou or musk ox.

PRONG-HORNED ANTELOPE, WHITE GOAT, COUGAR, JAGUAR, WOLF AND WALRUS

THE prong-buck or prong-horned antelope belongs to the family *Antilocapridæ*, which is quite distinct from and yet possibly a sub-family of the *Bovidæ*. This family, which consists of a single genus, *Antilocapra* (Ord, 1818), and of one species, which is only found in North America, has certain peculiarities of the giraffes, goats, antelopes and deer. The prong-horn is a ruminant and, like the giraffe, has two hoofs on each foot. Its similarity to the goats is seen in possessing a gall-bladder and a system of scent-glands; like the deer it has four teats, long hair and an under coat of wool. Its horns are like the goat's, with a bony core; nevertheless, as in deer, the horns are branched and shed every year. The word cabrit, or cabrie, as used by the French Canadians, is probably a Basque corruption from the Spanish cabra (a goat), but Dr Coues thinks that it may be a native word which has been adapted.

A good buck is about $37\frac{1}{2}$ inches at the shoulder; head and body, length $47\frac{3}{4}$ inches; tail, $3\frac{1}{2}$ inches. A large male weighed by Mr E. S. Dodge scaled 125 lb. The general colour of the adult male is a rich fawn, with the sides of the face, nape of the neck, base of the ears, two bands on the throat, breast, belly, rump and inside of the legs, white. The upper part of the muzzle, a patch under each ear, eyes, horns, hoofs and short mane are black. The female is similar in colour, with the black parts less defined and the spots under the ears often absent. The young are at first greyish-brown, with pale markings of the adult colours, which they assume during the first winter.

The horns are the most remarkable feature of this animal. The outside case is branched and shed each year like the antlers of a deer. This interesting fact was first observed by Rufus B. Sage in 1841, and though Judge Caton published a detailed account of the shedding of horns annually, the fact was not generally accepted by naturalists until about the year 1886. Caton's observations show that the male at birth has a small bony excrescence over each eye. At four months this breaks through the skin in the small and movable horn. In the following January, when an inch long, this is pushed off by the new horn growing below it, this being on

PRONG-HORNED ANTELOPE

the top of a bony core. Two months later the developed horn is about three inches long. In the following year the shedding takes place earlier, whilst the bony core remains and a small prong is developed on the outer case.

We now know that the adult males shed their horns in October, and the new horn is already well developed, though somewhat soft, before the old ones are shed. Old bucks in prime condition often shed their horns as early as September. Mr W. McFadden, of Denver, shot at a buck antelope near Elkhead River, Colorado, in the autumn of 1894. It ran twenty yards and fell dead. On examining it he found that instead of good horns it only carried two small spikes. The mystery was explained when he found both of the complete horns (a large pair) lying on the ground where the animal fell.

The largest known pair of antelope horns belong to Mr Evan Anderson, and were killed a few years ago in New Mexico. They measure $19\frac{1}{2}$ inches in length and are somewhat malformed. Mr Thompson-Seton records a remarkable head shot by Mr E. S. Dodge, near Oracle, Arizona, in 1897. The right horn is $17\frac{3}{8}$ inches and has a spread of 15 inches. The best head in Europe I have seen is one I shot in the Big Horn Mountains in Wyoming in 1886, after an exciting chase lasting a week. It measured 17 inches in length and has the unusual width of $17\frac{1}{2}$ inches. The late Mr Otho Shaw possessed one of 17 inches, which I have seen, and Mr J. Whitaker has one of $17\frac{1}{4}$ inches, which I have also examined. Dr Hornaday now considers that any horns exceeding 12 inches in length are large, but in the 'eighties measurements over 14 inches were quite common. Females, as a rule, are hornless, but I have seen several, and shot one, with horns over an inch and a half in length.

In 1535 Francisco Vasquez de Coronado landed in Mexico and five years later set forth on his march northward as far as Kansas. He undoubtedly saw antelopes, although he gives no definite description of them. His lieutenant, Castañeda, mentions "Sierbos, remendados de blanco" (i.e. stags patched with white). Herrera (1601) mentions antelopes under their proper name, *Berendos*. In 1651 Hernandez describes the animal under the old Aztec name of Teuthlalmaçame or Temamacame, and *Berendos*, the name by which it is still known in Mexico.

By nature the prong-horned antelope is a native of the high and open plains of the west, although in Texas and California it was formerly found close to sea level. It has a preference for great flat prairies, or open, rolling, hilly lands, but in summer it is often found very high up in small

THE GUN AT HOME AND ABROAD

parks amongst the timber, to an elevation of six or seven thousand feet. In some cases, to reach these, it must pass along the deer and bear paths through dense forest. Formerly the antelope was found far north in Manitoba, west of the Pembina Mountains, where it is still called the Cabrie. They were plentiful in Central Manitoba until 1880, and are still found in the plains of Western Alberta to the east of Calgary. I saw several bands there from the train between Medicine Hat and Macleod in 1908, but snow storms and wire fences are rapidly reducing their numbers, and they will soon be extinct north of the Canadian Pacific Railway.

Mr Brooks, on whose great ranch they are found, tells me that they try to migrate south in the first heavy snowfall in November, and when they meet with a wire fence they will not jump over it, but run helplessly up and down until they are starved. He has found several whole bands lying dead on the same spot.

Prong-buck appear to be satisfied with a very limited range of prairie, provided that food and water are present at all seasons. They seem capable of withstanding a considerable degree of cold if there is not snow with it. A band will stay in a small region three or four miles across for a whole season, and will not leave it even if troops of migrating animals of the same species pass through it, because, knowing the local conditions they are satisfied with them. Where antelope are still fairly plentiful, and that is now in very few places, they are usually met with in small bands scattered over a wide area. In 1886 I found small parties of antelope about fifty miles north of Rawlins, Wyoming, and these increased in numbers until we reached the valley of the Sweet Water in the centre of the "bad-lands," where they were literally in thousands.

One morning I left a small ranch and, going about half a mile, stood upon a slight eminence on the prairie. I calculated that there were at least 1,000 antelope in view at the same moment. They were scattered about in small bands of from ten to twenty, and at the early hour of sunrise were mostly feeding. One party of twenty animals were, however, engaged in play and ran and chased each other in feigned alarm, constantly lowering and spreading the white discs on the buttocks which gleamed and flashed in the morning sun like snowy chrysanthemums.

Although the ranchman seemed to do little else but shoot these antelope they were remarkably tame and several times allowed me to approach within 150 yards of a band, whilst later in the day, when my brother and I were travelling north in our buck-board, we often came to within closer



Photo by]

[J. Hicks.

PRONG-HORNED ANTELOPE.

Length on outside curve 17 inches: Tip to tip $17\frac{1}{2}$ inches.

Shot in Wyoming, 1886, by Mr J. G. Millais.

PLATE CXIV.

PRONG-HORNED ANTELOPE

range. These antelope were, in fact, very much tamer than any others I afterwards saw in the main range in the Big Horns, where they were little hunted yet were constantly on the watch. I have several times noticed this disposition amongst wild animals; for, where they are very abundant and on some home range which they have no intention of leaving, they will often permit hunters of experience (that is to say, men who do not follow and chase the game after having fired a single shot) to stay almost in their midst and take toll of them; whilst in other places where they are only rarely disturbed, but are nevertheless not permanent dwellers, they seem to be always on the qui vive and full of suspicion. So, too, the wildness or tameness of certain animals, especially antelopes, seems to be affected by weather as well as the movements of men who pursue them. I have toiled for hours, and often for days in the sun in Africa, trying to get near wild antelopes and, after repeated failures, have, during the same day ridden my horse, or walked past troops of the same antelope within 100 yards, when I had no desire to shoot one.

In the mountains it is common to see one, two or three adult males together, always standing on the ridge and using their telescopic eyes. I have now seen a good many wild animals in their homes, and have not yet discovered one that approaches the American prong-buck in powers of vision. Even the sharp eyed mountain sheep is its inferior and one member of a band is always on the look out. When a prong-horn stands upon a ridge he seems to see even the things that lie still, as well as the things which move, which few animals do; and if two men are hunting together almost the only chance of a shot is for one to remain in full view of the game, and allow the other to crawl away and make the stalk. Even this is seldom successful, for by the time the stalker has made his circuit the antelope has got tired of watching the man in the valley and has retired to the next ridge.

As already noted, these antelope are only migratory when forced to move by severe conditions. The prong-buck in Jackson's Hole go south 150 miles to the Red Desert. Those of the main range of the Rockies go first towards the foothills and then to the open prairies. Formerly vast numbers of antelope collected about Colorado Springs in the winter, and, when the Union Pacific was first opened, enormous numbers were seen in every sheltered valley between Cheyenne and Denver.

The old range of the prong-buck covered an area of two million square miles, whilst the present range is about half that size. The reduction

THE GUN AT HOME AND ABROAD

amongst the antelope has been enormous. They were formerly one of the commonest animals on the plains of Wyoming, Montana, California, Texas and Mexico, where bands of from 2,000 to 3,000 were not uncommon. In this large area it is doubtful if there are 100,000 antelope to-day; and of these, at least half are in Mexico.

In the early 'eighties they were very abundant in the "bad-lands" of Dakota, and even in 1896 they were still numerous in Montana. Dr Edward Munson believes that in the great blizzard of 1896 "40,000 antelope took shelter in the coulées along Milk River alone in Montana, near his post, Fort Assiniboin."

All old travellers speak of the enormous numbers of antelope that frequented the vicinity of the railway between Denver and Cheyenne, and Major Pond says:

"For ten to twelve miles in Cache le Poudre Valley and all the way west of the train, about three-quarters to half a mile away, was one long band of antelope, twenty to forty rods wide, practically continuous and huddled together for warmth. Their numbers changed the colour of the country."

There seems to be little doubt that at this time the antelope outnumbered the buffalo. In 1896 there were a thousand antelope in the Yellowstone Park, of whose 3,000 square miles about one-third is country suitable to the antelope. When alarmed the prong-buck erects and displays the snow-white rump patch which is at once seen by others grazing near, who in turn do the same.

Amongst the roots of the hair of the buttocks there is a gland secreting a fluid having a strong musky smell. Mr Thompson-Seton thinks that the musk odour is set free and serves as an additional warning to other antelopes. The bristling mane of the neck is also slightly raised in moments of alarm or excitement. The glandular system of animals seems to be but little understood. Caton thought that these pungent odours helped to protect the owner from noxious flies. Mr Thompson-Seton thinks they are of chief service for inter-communication. Others think they are purely sexual. Personally, I do not know and have no opinion to offer.

The buck antelope utters a shrill whistle or snort when it is alarmed or full of curiosity, whilst the female makes use of a sort of grunting bleat to call her kid. Nature has a way of economizing and does away with those parts of the body which cease to be of use; so the antelope living on hard dry ground has no use for the pair of back hoofs to the foot, and they have

PRONG-HORNED ANTELOPE

now become lost. With two toes on each foot prong-buck have developed surprising swiftness. The only animal that can surpass them in speed is the horse with its single-hoofed toe. There have been greyhounds that have caught buck antelope in fair chase, but these were very exceptional dogs and, possibly, rather slow antelopes.

The swiftest animal in the world is the blood horse, which can develop a speed of thirty-four miles an hour (thirty-six is the record). A prong horned antelope can travel at the rate of thirty-two miles an hour, and a blesbok and a tsessebe at the same rate; whilst a greyhound reaches thirty miles an hour. Opinions differ as to the rate at which the cheetah makes its rush upon the black buck, which can travel as fast as any ordinary horse; but it is probably something over thirty miles an hour. At any rate the speed of the prong-buck is so great that when it has a slight start no ordinary horse of the plains can overtake it. It is probable, however, that in a long hunt foxhounds could run it down and certainly African hunting dogs could do so, as they are the masters of all ruminant game in Africa.

The walk of these antelope is slow and somewhat stiff; their trot, free, elegant and graceful. Whilst trotting the head is held high and the mane erected especially when "showing off." Sometimes on starting to run they gallop with the head held up and progress with long stiff-legged leaps like the mule deer. But when once they have settled down to travel, they carry the head low, rather like African antelopes, such as the springbok and the blesbok, and progress with easy machine-like action. Their leaping powers are confined to the horizontal, and they are so unaccustomed to jumping high that a four-foot fence is said to confine them. This is somewhat curious, because the springbok, which lives in similar situations, can make the most surprising perpendicular jumps. One that was confined in Capetown was scared by a dog and jumped right out of the enclosure over a fence 11 feet high.

In old days these antelope were said to be filled with curiosity and, at the time of Lewis and Clark, the usual method of luring them within shot was for the gunner to conceal himself and wave a handkerchief on a stick until the band came within range. Nowadays, however, and even in the 'seventies and 'eighties antelope had become much too wary to be taken in by such a trick.

Prong-buck live on the cactus, sage and grass of the dry plains and do not seem to relish twigs or leaves of any kind. In confinement, they are

THE GUN AT HOME AND ABROAD

fond of salt, grain of various kinds, and bread. There is not the least doubt that in the arid plains of Mexico and Wyoming antelope can live for months without drinking, getting sufficient moisture from the cactuses. It is now proved that in Africa many antelopes, and even giraffes, can live for many months without ever drinking; whilst it is possible that the addax leucoryx, and Loder's gazelle never drink at all, for there are years in which no rain falls in Western Kordofan and the Central Sahara, and the wells in these regions are so situated that the game can seldom get at them. The prong-horned antelope do, however, come to water nearly every day when it is near their haunts.

The worst enemy of the antelope is, of course, man. Sheep destroy the grass of their winter range and inflict great privations upon them, but serious attacks are made on them at all times by wolves, coyotes, and eagles, which kill large numbers of the kids. In hard weather eagles occasionally kill adult antelopes. In very severe winters, such as that of 1893, large numbers perish in the deep snow. In that year 900 carcasses were found in one ravine near Fort Assiniboin, Montana, and it is estimated that four-fifths of the antelope of that region perished. Great mortality has also been caused amongst them by epidemics of enteritis. In the summer of 1873 this disease destroyed three-fourths of the antelopes between the Yellowstone and Missouri Rivers.

During the winter antelope live in large bands, of both sexes and various sizes, but in spring these bands break up into smaller ones, and in late May, or in early June, the female goes off by herself and produces her two kids. At this time she hides her young but constantly stands guard, on the watch for wolves and coyotes. She will attack a coyote with horns and forefeet and can drive off a single one, but a wolf is generally too strong for her. In September the bucks join the bands and indulge in much play at this season. At the end of the month the big bucks gather their harems and display all the savage disposition and jealousy that other ruminants do. Audubon says that they fight with great courage and ferocity; but Roosevelt does not think that these duels are very serious affairs. They approach each other with heads close to the ground and, after fencing, close like deer. Their object seems to be to rip the throat of their adversary; but they seldom succeed in hurting one another. When one buck at last turns tail, the victor chases his rival sometimes for a great distance.

The stalking of prong-horned antelope seems to me to be quite one of the best of American sports, although the ground does not present the

PRONG-HORNED ANTELOPE

wind variations that are to be found in the home of the mountain sheep. It is, nevertheless, often difficult to find sufficient cover or any line of approach, such as a dry watercourse or heavy sage brush, by means of which the sharp eyed animals may be outwitted. Where antelope are scarce and wary they are quite as difficult to kill as sheep, though the fine males are not so hard to find. I remember many interesting stalks after antelope in 1886. They were then plentiful on the plains and even high up on the rolling foothills of the Rockies. Nearly all these stalks ended in failure, though I at last succeeded in killing two good males. Early in October we were driven out of the Red Fork at Powder River by heavy snow, and, descending several thousand feet, we made a camp in a wooded glen beneath a long open ridge. As camp was being pitched I saw on the ridge above us the finest buck antelope it was possible to find. His horns were unusually long and wide, and he stood, with his little harem of six does, on the skyline and watched our movements. The next day I hunted wapiti all day without success and in the evening spied the big buck feeding just below the ridge. After a long detour I only managed to get within 400 yards when one of the does saw me. Next morning he was back in his original position. The same story of failure was repeated every day for four days and on the fifth evening I again tried to stalk the buck. Having on previous occasions failed to get near him by coming over the top I thought I would attempt the stalk from below, as I had noticed a dry and shallow watercourse on the slope of the ridge. The antelope were feeding in a slight depression about 100 yards from the right-hand top of this, and immediately below them were three or four semi-wild cattle which had strayed into the mountains. The first part of the stalk was, as usual, easy; and then as I ascended to the balder side of the mountain the shelter of the watercourse was reduced to scattered groups of stones and small bunches of grass. When within 300 yards of the antelope, I suddenly came on a huge cow. As I knew she would run if she saw anything, I had to remain still for a quarter of an hour before she passed the watercourse and fed on. In the slight depression where the antelope were feeding the grass was fairly long and abundant, and this, coupled with the inequalities of the ground, helped to screen me until I was within 100 yards of the unconscious band. This was the only occasion on which I managed to get within easy shooting range of these antelopes. Placing my hat on some stones a little higher than my head, I raised myself to a shooting position, expecting to see the big buck. What was my disgust on finding that although the does all presented

THE GUN AT HOME AND ABROAD

an easy target, the big male stood exactly in the blaze of the setting sun, so that I could not see him or my sights at all. With other animals it might have been possible to slowly withdraw without being seen, and come in from another angle, but not so with prong-buck. There was a snort, a blaze of white sterns and a dash up the hill almost as soon as I had raised the rifle. The buck now sprang to one side and I tried to kill him as he leapt along, but made a clean miss. The band rushed to the ridge, and I thought all was over. Fortune, however, favoured me that day. On coming to the ridge, the old buck turned and ran down the hill slightly, whilst the does moved to the left, and were evidently bent on going in another direction. He hesitated, broke into a trot and then stopped, and I gave him a bullet at 200 yards which made a loud smack. The buck then turned and ran up hill after the does. I thought he would never stop and that I had hit him too low. Suddenly his head went down, he ran round in two circles and lay down with his head stretched out. When I reached him he was quite dead, and I found I had killed a remarkable trophy, the horns measuring 17 inches in length and $17\frac{1}{2}$ inches in span.

It is a fact, sad but true, that the greater the abundance of any species, the more sure is its destruction, once railways and their attendant train of settlers and shooters invade a game range. It has been so in the case of the mule deer, the wapiti, the buffalo, the mountain sheep and the prong-horn. In Canada, Wyoming and Montana, only one antelope is allowed to be shot, whilst in Colorado it is, I believe, strictly preserved. Sportsmen who desire to add this interesting animal to their collections must now go to Mexico, that is to say, if the country ever becomes free from its swarm of cut-throats. There is good hunting still there, with a chance of bear and sheep as well, if the hunter goes to the right district.

THE WHITE, OR MOUNTAIN GOAT

The white, or mountain goat (*Oreamnus montanus*) is a native of the higher mountain ranges of Montana, Idaho, British Columbia, the Cascade Mountains and so north to Alaska. It measures about 4 feet in length and 3 feet at the shoulder. The whole of the head, neck and body is covered with long hanging white hair, with a short woolly under-fur, yellowish white. The shoulders are rather high and humped, and the short neck and head is carried below their level. The nose is hairy and there is a short beard on the chin. The horns in both sexes are somewhat slender and curve slightly



ROCKY MOUNTAIN GOAT (*Haplocerus montanus*).

In the Collection of Sir Edmund G. Loder, Bart.

THE WHITE, OR MOUNTAIN GOAT

backwards. These, as well as the hoofs, are black. The length of the horns in both males and females is about the same, but those of the male are much thicker. They measure generally from $9\frac{1}{2}$ inches to 10 inches long, but two specimens of $11\frac{1}{2}$ inches are known. There is a large black gland at the back of the base of each horn, being similar to the chamois in this respect. Although termed a goat, this strange animal belongs to the same group as the serows, which it resembles in several ways.

Mountain goats frequent the highest and most inaccessible slopes in the mountains of British Columbia and Alaska. They love the steep wall-like cliffs, generally above timber-line, and amidst the glaciers and precipices of the wildest scenery in North America they generally make their home. On the western side of British Columbia and Alaska they seem very partial to the steep cliffs of the coast ranges, and may often be seen from the decks of the steamers as they travel northward during the summer. Their snow-white forms are very conspicuous against the black crags at this season, but in winter they are, of course, almost invisible. They are tame, unsophisticated creatures, relying solely on the protection of their natural surroundings to keep man, their chief enemy, at bay. A hunter may be the worst shot in the world, but if he possesses a stout heart and limbs he will have no difficulty in bagging the white goat. It is merely a question of climbing for a few hours to a point above where the goats have been seen to make sure of bagging one or more of their number.

Frederick Ireland says ("American Animals," p. 58):

"The most charming innocent creatures that I met in the Cascade Mountains were the white goats. What do you think of a wild animal which, after he knows you are on his track, will stop and turn back, to peer round the corner and see what you are? These stately animals, with their long white aprons, coal-black eyes and sharp little horns, really seem to me too unsophisticated to shoot. At Ashcroft and Lillooet people had told me to get my hand in by shooting a goat, and then perhaps I could improve by getting a sheep . . . We nearly burst our hearts by climbing for an hour or two up the mansard roof of North America and high above the deer pasture. The winter on the mountain tops had driven the game down and sent the bears to their winter dens. We had found sheep tracks and were following along to see where they led, when suddenly we saw four white animals on the edge of an abyss of the kind which Doré has portrayed in illustrating Dante. The goats were not very far from us in a straight line, but it was a long way round.

THE GUN AT HOME AND ABROAD

They saw us and started on a rheumatic gallop, but only went a little way, and as they reached a turn, huddled up and looked back. We picked our way over towards their last place of abode, reaching the opposite side of the canyon by means wholly unsuited to nervous people. There was just snow enough to show their tracks, which led along scandalous precipices. The fever of pursuit was on my guide, and he walked uprightly in places where I became a quadruped. This was trying to his patience, for he caught glimpses of the goats which I, by reason of slower progress, was denied. In about half an hour we came to a great chimney of rock in the path, and, clinging with fingers and moccasins, he went around the face of it . . . When I came out above him I saw he had the goats in a sort of natural trap, and they were all bunched up against a rock which I thought could not be passed. The biggest billy stood faced about, his long white beard and petticoats making him look like the high priest of some heathen temple. 'Don't shoot; he fall down,' yelled my guide. At the sound of the voice the goat made a desperate attempt at the face of the rock, scrambling up at an obtuse angle, then standing on his hind legs and throwing his fore feet over, from right to left. I thought he would surely fall back, but he did not. The smaller goats followed and in a moment they were gone. . . . We made a flank movement, and perhaps a quarter of a mile from the first round-up we saw those four fool goats again, the big one and a small one looking back around the corner, to see if we were really coming. Then we did shoot and curiosity broke up that family."

Goats are often found on the precipices immediately above the timber and seem to choose their paths where the angle of the rocks is of the steepest.

"If," says Owen Wister, "there was a precipice and a sound flat-top, they took the precipice and crossed its face on juts that did not look as if your hat would hang on them. In this, I think, they are worse than the mountain sheep, if that is possible. Certainly they do not seem to come down into the high pastures and feed on the grass levels as the sheep will."

Mr Wister thinks that, if not quickwitted, the white goat is certainly wary, and accurately describes the movements of the animal on the mountain face as I have myself seen them.

"We watched his slow movements," he says, speaking of a male he had disturbed, "through the glass, and were reminded of a bear.

THE COUGAR

He felt safe and was stepping deliberately along, often stopping, often walking up some small point and surveying the scenery. He moved in an easy rolling fashion, and turned his head importantly. Then he lay down in the sun, but saw us on our way to him and bounced off. We came to the place where he had jumped down sheer twenty feet at least. His hoof-tracks were on the edge, and in the gravel below the heavy scatter he made in landing; and then—hasty tracks round a corner of rock and no more goat that day.”

Even in the winter the white goat does not leave his native crags but subsists on the lichen-like moss and *dryas* which it finds amongst the crevices. In the autumn, soon after the first snowfall, they often move right through the forests to other cliffs and in so doing sometimes fall a victim to the grizzly bear who, according to the Indians of Cassiar, makes a practice of hunting them at this season. No doubt white goats are very much wilder in Montana and Idaho, where they have been hunted for the past thirty years more severely than in British Columbia and Alaska, where they are at all times very tame. But even in out-of-the-way places it is not possible to approach goats from below and a detour to get above them is necessary. A favourite trick of theirs, and other mountain game, is to remain quite still until the hunter passes out of sight behind some object, the goat then immediately makes off up-hill and may never stop until it has reached some distant range. Perhaps the easiest way to obtain a couple of good specimens of the Rocky Mountain goat is to go direct to Vancouver, where Mr Bryan Williams can always give the latest information about the game. They are to be found in the coastal ranges within one day of Vancouver. A regular resort is the head of Jervis Inlet, or on a Bute Inlet, where they can be spied from a motor launch on the sea. They do not exist on any of the Pacific Islands except on Pitt Island close to the mainland.

The best time to hunt goats is in late September, when they may still be spied below the snow line and their coats are in good condition.

THE COUGAR

The cougar (*Felis concolor*), or, as it is sometimes called, the puma, mountain lion, panther or painter, is still very common in the Rocky Mountains and to the west of them. It also exists south, in Texas and Mexico and right through South America to Patagonia, where a larger form is found.

THE GUN AT HOME AND ABROAD

When it comes to fighting anything on equal terms the full-grown cougar can kill the largest dog, and even now they kill full-grown cattle and horses occasionally; but towards man he is quite inoffensive, although there are one or two records of boys being attacked. A few cougars have lingered until recently as far east as New Hampshire; but they are now practically extinct east of the plains bordering on the Rocky Mountains. Perhaps nowhere are they so abundant as in Vancouver Island, where a Campbell River hunter named Smith told me he could kill one almost any day with the help of his trained collies. No animal is less seen by the hunter than the cougar, although his tracks are often plentiful in the snow. During the day this large cat keeps hidden in scrub, hollow trees or rocks, and only emerges at morning and evening to lie in some small recess close to a game trail and dash out on unsuspecting sheep, goat or deer as they pass its ambush. Cougars have regular places in Wyoming and Colorado, often behind a large overhanging rock, where they wait for the game, and sometimes twenty or thirty skulls and skeletons, silent witnesses of their prowess, may be found lying together. They kill much as other cats do, by seizing their victims across the shoulders and biting through the vertebræ of the neck. So great have been their depredations in the two last-named states that parties are regularly organized in spring to hunt them with packs of dogs, which, after a sharp run of a mile or two, take them to bay in a tree, where they are easily shot. Some of the hounds employed in this chase are so keen that they can also climb the trees, and will stand baying at the game within a yard or two.

The chances of seeing a cougar and shooting it by the ordinary methods of stalking are rare, so that, if a skin is desired, it is best to make arrangements to go out in spring with Steve Elkins, Ned Frost, or one of the regular cougar hunters, who make a practice of hunting these animals and possess a well trained pack of dogs.

Cougars play great havoc with chickens, pigs, sheep and farm stock generally, especially where game has become scarce, and so every western farmer keeps a shot-gun, loaded with buckshot, standing behind his front door that he may seize it and run to the rescue of his property if the depredator should appear and attack by day, as he sometimes does. These animals are also fairly easy to trap, and large numbers are also destroyed by the use of strychnine.

The cougar runs from man in fear, and will never attack, even at close quarters, when wounded, and I cannot find any reliable instance of a hunter

THE MEXICAN JAGUAR

being charged by one. A few years ago a boy near Vancouver went out to cut some wood for the house, and was attacked and very badly mauled by a female cougar, who had her cubs concealed in some scrub, and it is possible that the maternal instinct may be occasionally very strong, as it is sometimes in the grizzly bear. Even in the old days, before wild animals had learned that man was their most serious enemy, we never heard from the Indians that the cougar was a dangerous beast, or that it would attack like the grizzly.

The general habits of this animal are very similar to those of all the large cats, and need not be discussed. In size the adult male is from 8 feet to 8 feet 6 inches in length, including a 3-foot tail. The ears are rounded and have no tufts such as are found on the lynx. The general colour is a pale rufus or yellowish-brown, being darker along the back and tail. Tip of the tail, blackish. The face is grey with a black mark from the eye to the muzzle. The chin and underparts a dull white. A closely allied variety, *F. c. coryi*, is found in Florida. Where there are settlements the cougar retires by day to dense forests, swamp thickets or mountain gorges, and only moves about at night or in the dusk. In wild regions, such as the plains of Patagonia, it moves about freely in the day. Its favourite prey are the does and fawns of deer, which it kills with ease if the snow is heavy, and will fasten on to a band until not one is left. No doubt, like the cheetah, the puma can rush with tremendous speed for a very short distance, and, encumbered by snow, its victims cannot make such headway as on hard ground. It is the special enemy of mountain sheep, and in summer kills large numbers of goats; other small game, such as rabbits, and even porcupines, are not despised. Although, when hungry, it will, like the leopard, seize and carry off a dog, yet when pursued by even a single small dog, which is quite unable to do it any harm, the cougar will run from it and take refuge in a tree. With such weapons of offence as it possesses it is somewhat remarkable that the cougar does not retain as strong a fighting disposition as the leopard, for if it had one-tenth of the pluck of that animal men would need to hunt it with far greater caution.

THE MEXICAN JAGUAR

The Mexican jaguar (*Felis onca*) is common in Mexico, but is only a rare visitor to the southern part of Texas. Like all other large cats it preys on a variety of smaller mammals, and occasionally attacks stock.

THE GUN AT HOME AND ABROAD

Its general habits are very similar to the cougar's, but it frequents denser cover and is seldom seen. Few sportsmen have ever set eyes on it, and in Mexico it is said not to bear the ferocious character attributed to it by white settlers and Indians in the jungle portions of South America. The North American variety is about 7 feet in length with a tail of 2 feet. Tawny yellow above and white below, it is spotted with black along the back, with light centred rosettes on the sides, each with a central black dot. The tail is ringed black and yellow. This large cat is also found in Southern Louisiana, as well as Texas and New Mexico, and allied varieties are known in Central and South America. The ocelot (*Felis pardalis*) is also found in the same range.

THE CANADA LYNX

The Canada lynx (*Felis lynx canadensis*) is very common throughout Boreal North America, and formerly existed as far south as Pennsylvania. In Newfoundland, where it is very abundant, it is represented by *F. l. c. subsolanus*, a variety somewhat darker and more richly coloured. In Alaska, as we should expect, there is a paler form, *F. l. c. mollipilosus*.

The sight of this animal is so keen that the ancients believed that it had the power of seeing through all substances, whether opaque or not. The Canada lynx is a savage beast with large muscular legs and paws out of all proportion to the size of its lean body and stunted tail. Its soft grey and tawny fur is extremely difficult to distinguish in the forest; and almost the only time it is ever seen is when it comes out on to the sand bars of the rivers, as it frequently does in the dusk, to drink. I have been in places in Newfoundland where these cats were exceedingly plentiful, and their tracks showing in every direction in the woods and on the sand bars, and have never once seen one except in a trap. The Indians and white men of that island catch large numbers of them: sometimes one trapper will kill as many as 70 to 100 in a single season. Their method of catching them is extremely simple. The lynx seldom springs at a bait, but will always reach up to it by placing its fore-paws on any log or stump. The natives accordingly hang a dead rabbit on a tree, just out of reach of the ground, and saw off another tree beside it at a convenient height for the lynx to place its paws. On this an ordinary gin is placed, being fixed to the stump, and the cat never looks to see what is there before raising his feet. A favourite food of this animal is the varying hare and the snow-shoe

THE GREY WOLF

rabbit. These it disturbs from their forms and quickly runs down by a series of immense leaps, performed at a great speed. I have often seen these little forest tragedies so clearly written on the snow that it is easy to reconstruct the scene by following the footprints. Here the lynx has started the hare, here are the scurrying footsteps of the rodent, and here the wide bounds of the lynx. The rushes seldom exceeded thirty yards, when the scattered snow and dirt mixed with a little blood indicate the death of the hare. Sometimes the lynx drags his prey a short distance, but he generally devours it on the spot.

The lynx can climb trees with ease and robs the nests of birds and squirrels. This animal is rarely tamed in confinement, for even the smallest kittens betray an indomitable ferocity possessed by few young creatures; yet I have seen one which was as quiet and good natured as any household cat, and would follow a man about and permit caresses with pleasure.

The young are born about May and deposited by the mother under some thickets or logs until they are able to follow her and be taught the business of hunting.

In the long Canadian winter the lynx is often hard put to it to make a living, for hares are migratory and the lynx not so to any great extent. In the snow it ekes out a precarious livelihood by catching grouse, for at this time most of the small mammals are hibernating and in secure retreats. It is not averse to any old carrion it can find, and so comes out of the winter in a miserably thin condition. Yet what must be taken into consideration is the long period which carnivores are able to go without touching food. Cats and wolves can go for weeks without food, whilst seals, especially the sea lions and the fur seals, often live in good health for months without touching fish. The lynx cannot be considered a high-class animal of the chase, for, like the cougar and the wolf, it possesses a nature of extreme caution, whilst, if spied first by man—a rare thing indeed—it is of so restless a nature that a stalk is impossible. Sometimes just a chance snap-shot is obtained in the forest, or as the animal crosses a river or some opening. The value of the fur of the lynx is of small account, two to three dollars being generally paid for good skins in Canada and Newfoundland.

THE GREY WOLF

The grey wolf (*Canis occidentalis*), also called the timber wolf, is often met with by the hunter, especially the large black wolf found in Northern

THE GUN AT HOME AND ABROAD

British Columbia and Alaska. The pelt of the latter is an exceedingly fine one and as desirable a hunting trophy as the skin of a black bear. West of the Mississippi, where the range of the grey wolf begins, as far as the Rocky Mountains and through the civilized parts of Canada the grey wolf is not often seen except in winter; but in the far North-West it hunts as much by day as by night, and the traveller may often come upon these animals singly or in small parties engaged in the chase. Wolves are restless, wandering creatures, and almost any kind of country seems to suit them, provided game is to be found. From the dense swamps of hemlock and tamarack of the north to the everglades of Florida, to the snow-swept prairies of the west and the bald mountains of the Arctic Circle, wolves are always found on the prowl, ready to pick up the weaklings of any race, or, in winter by concerted attack, to battle with the strong. Nothing comes amiss to them, from a fledgling bird to the largest bull moose. Their resource and endurance is infinite, and a forest or prairie country is well settled indeed where the wolves are reduced to a minimum. In summer they usually go about singly, in pairs, or the mother with her cubs, and kill young birds, small mammals, the calves of ungulates and anything that cannot get out of the way. Towards the autumn the families join together, and in winter very large packs are sometimes formed, and hunt deer, wapiti, caribou and moose. Formerly every great herd of buffalo had its attendant packs of wolves, which skulked on the verge of the herd and picked off the young and the wounded. So voracious are these animals that when hungry they will even run down and kill their cousins the foxes, which, though swifter for a short distance, are no match for them in wind and endurance. Even animals of their own kind that are wounded or sick are overpowered and destroyed. A full-grown male grey wolf measures about 5 feet 6 inches to 6 feet, including the tail hairs, and weighs from 70 to 90 lb.; 150 lb. is given as the maximum weight. The female is slightly smaller. Individuals vary much in colour, usually being brownish-grey and lighter underneath, with much of the upper parts tipped with brownish-black. The tail itself often has the tip black, with a few white hairs interspersed. The under fur is of a brownish-grey. Even so far south as Winnipeg, pure white and black skins are not uncommon. In Alaska most of the wolves are jet black, with a few white and grey ones.

In North America wolves do not seem to assemble in such large packs as they do in Siberia, five to ten being the usual number. The hunting call

THE GREY WOLF

which they make is quite distinct from the melancholy howling one hears so often about the camp when the hunter has killed some animal. Young wolves are easily tamed, and in some instances they become interesting and affectionate pets. A friend of mine, Mr H. Dennis, possessed a pair from the same litter, the male of which was always savage and the female gentle and affectionate. He used to take her out for walks in the country, but the sight of a sheep was always too much for her, and he had great difficulty in holding her in. Another friend, Mr Meade-Waldo, had a very large male from the same litter of timber wolves. He used to take it out pheasant shooting. It was a good retriever, and would bring birds to hand, often, however, terribly crushed.

The Alaskan and Labrador sled-dogs are merely domesticated wolves, or largely mixed with wild wolf blood, and it is well known that they must be kept in obedience with a very severe hand, otherwise they are dangerous to strangers and even to their own master should he happen to stumble and fall. There are many instances of these savage dogs killing and devouring men, women and children, and they are never to be trusted.

The young of the wolf number three to thirteen, but usually six or seven. They are born blind and almost naked, and their eyes are not opened until the ninth day. The time of birth is usually either in March or April. The young follow their mother at about three months old, and until that time both the father and mother bring fresh game to the den. At this time almost their only enemy is the golden eagle, which often picks up the pups as they play round the entrance to the den.

In the autumn and winter men formerly killed enormous numbers of wolves in the west, by trap and poison; but of recent years wolves have become extraordinarily cunning, and have learnt how to detect and defy both of these devices to slay them. It is not easy to prove how they have done this, yet it is a well-known fact that in the civilized parts of North America wolves now seldom get into a steel trap. Any human possession such as a horse shoe, a spur, or part of a man's dress, is sufficient to protect the carcass of a deer. Wolves, too, will hardly ever take a strychnine bait, and, if they do, they eject it at once. There is no doubt that the nature of the wolf has, in recent times, undergone considerable change. Its subtle mind has grasped the fact that man and all his contrivances must be left alone. A hundred years ago man was still considered a fair prey, to be chased and eaten in times of scarcity, for the toll of human beings annually

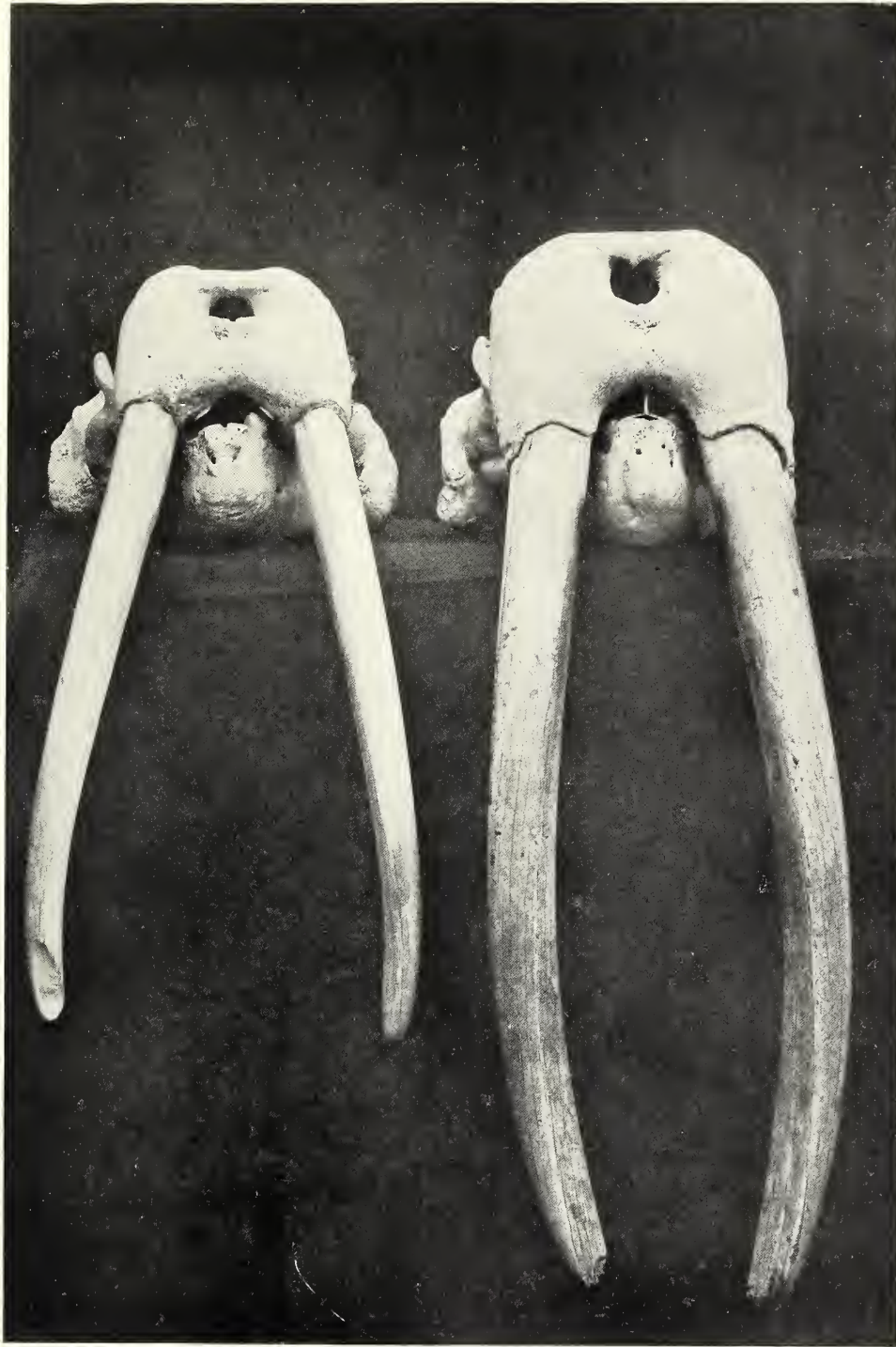
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destroyed by them in Europe and America was considerable. Although certain magazines delight in stories and pictures of men being treed, surrounded, or hunted to death by immense packs of wolves, I do not believe that there has been a single case of any traveller or hunter being overcome by them during the past thirty years. In a certain English magazine which specializes in this type of thrilling adventure, I noticed that nearly all the tales had their origin in the Carpathian forests of Galicia; and on mentioning this fact to the officer in charge of the crown forests out there, he having been resident in the country for fifty years and a man most likely to know the truth, he stigmatized all these tales as pure invention. The only case I have heard of in Canada where a man has been attacked by a wolf occurred in 1901, when an Indian, who was hunting with an American near Lake Kippewa, went to cut a steak off the haunch of a moose that was hanging outside the camp. As he took hold of the meat, he noticed that a large wolf was holding on to the other side of it, and before he had time to use his knife the angry beast sprang upon him and tore his arm and shoulder severely. It then let go and retreated into the darkness.

THE WALRUS

The walrus (*Odobæenus rosmarus*) is another desirable animal, whose head and tusks are much prized by the hunter. Until quite recently these sea mammals existed in large numbers about the outlying reefs between Nome and the Bering Straits; but in recent years the Esquimaux have obtained rifles, which, added to the use of their native harpoons, have created immense havoc amongst the herds. Moreover, a number of vessels nearly all trading in blubber, skins, and walrus ivory, now go north annually and take off the spoils of the chase, giving goods in return, and this induces the Esquimaux to hunt these animals at all seasons, whether the ice is open or absent. South of the Straits the walrus is now becoming scarce, so the hunters are now crossing to the Asiatic side and hunting them along both the Arctic and Pacific sides of Kamchatka, where they still exist in large numbers. Here the walrus grows to an immense size, and I have recently examined two heads of which the exposed portion of the tusks measured 32 and 36 inches. The teeth also are immensely thick, and heavier than those of any Atlantic walrus I have seen.

Nowadays, one of the best hunting trips to be undertaken, alas! only by



RECORD WALRUS TUSKS (on right).

Length 36 inches.

In the Collection of Sir Edmund G. Loder, Bart.

PLATE CXVI.

THE WALRUS

a rich man, who wishes to add to his collection four of the finest animals that exist, is to go to Kenai in May and hunt the great grizzly on the Kenai Peninsula in that month. In July the hunter can hire a steam launch and go north to hunt walrus about the Little Diomedé (Bering Straits), where these animals are still fairly numerous. In early August he can return to Alaska and in the hinterland hunt Dall's sheep in the mountains, and then descend and hunt the giant moose in September. All these animals are certainties to any sportsman of grit, who is a fair shot; but, as I have said, the expenses are great, roughly £800 to £1,000, according to length of time and men and boats employed.

J. G. MILLAIS.

NEW ZEALAND

THE DEER OF NEW ZEALAND

NEW ZEALAND deer are interesting to the stalker at home for many reasons. Their introduction into the islands is of such recent date that it is possible to trace every step in their development, and estimate in some degree the conditions which are favourable to the development of a stag's antlers and the maintenance of a healthy stock.

The three essentials which are requisite for the production of good heads are: (1) Healthy stock, (2) Adequate shelter, (3) Good and sufficient food supply.

The first naturally depends on the existence of the two latter conditions, and it is the failure of these which leads to such lamentable results in many Highland forests. I shall have a good deal to say as to the condition of deer in New Zealand later on. It will be sufficient here to state that the chief cause of the degeneracy which undoubtedly exists in certain localities is entirely due to overstocking and inbreeding. There is abundance of good food and splendid shelter. The good stock is there, but it has been woefully neglected in the past.

The divergence in type between the main herds is very marked. They are each descended from deer with well-defined characteristics which are maintained and intensified by their present environment. The three main herds are:

The Wairarapa in the North Island.

The Nelson and Otago herds in the South Island.

There is also in this island another herd situated in the Rakaia Gorge, Canterbury.

A brief account of the origin of these herds is necessary before the reader can understand the conditions which govern their existence.

THE WAIRARAPA HERD.

I cannot do better than quote what I wrote in "Stalks Abroad" about the Wairarapa deer:

"In 1862, by an arrangement with the late Prince Consort, who was the first man to make deer-stalking a fashionable sport, Mr John

THE DEER OF NEW ZEALAND

Morrison, the then New Zealand Government agent in London, forwarded six deer to the colony. A stag and two hinds were shipped by the 'Triton' to Wellington. One stag and one hind arrived safely on June 1, after a passage lasting over four months. The three remaining deer had been sent to Canterbury, but two of them succumbed on the voyage. The survivor, a hind, was accordingly sent to Wellington to join the two landed from the 'Triton.' Early in 1863 they were liberated on a Mr Carter's run. In 1906 the number of deer on Mr Riddiford's run was estimated at over 10,000. Indeed to such an extent had they increased that the authorities gave orders for a large number of hinds to be killed.**

The Wairarapa largely consists of bush country and the limestone formation enables the deer, while maintaining the German type of head (for there is little doubt that the imported deer were descended from German stock), to grow massive horns. More than one stag has been recorded with a beam measurement between the bay and tray tines of seven inches. At the exhibition of deer heads at Christchurch in 1907 I noticed three heads from this district with heavy bifurcations emanating from the back of the main beam, a formation not uncommon amongst park deer and for which high feeding is largely responsible.

I was talking, recently, with a well-known New Zealand stalker who told me that the Wairarapa herd were now in a very bad state. The conditions under which deer-stalking is conducted in New Zealand are very different from those which prevail in Europe. Anyone who can afford a rifle and a licence can go out stalking, though certain restrictions as to what deer may be shot have recently been imposed. Men were allowed to stalk in the Wairarapa who knew nothing whatever about deer nor what constituted a good head. Twelve or fourteen years ago the whole district, including a Government reserve of 32,000 acres, was open to sportsmen, but the privilege was grossly abused. Hundreds of young deer of both sexes were killed, not because they were weak and harmful to the upkeep of healthy stock, but out of pure lust for slaughter. The runholders in consequence very naturally closed their ground to all save their personal friends or those who had proper introductions. The democratic "sport" (an awful word!) of America and the colonies too often gauges the success of his sporting trips, not by the quality of the trophies

* Mr T. E. Donne writes recently: "To give an idea of their numbers, one large station owner in the Wairarapa made contracts for the destruction of 2,000 deer annually for several years in succession.

THE GUN AT HOME AND ABROAD

with which he returns but by the number of victims he can boast that he has slain. Unfortunately this vice seems to have affected some of those who like to label themselves big game hunters because they have made a short trip from England in quest of game. Travel is so easy nowadays that every *nouveau riche* snob and retired tradesman, by the expenditure of a few hundred pounds (for, indeed, a much smaller sum than he need expend on a Scottish deer-forest), can have a shooting expedition arranged and fill his walls with heads which formerly were regarded as the well-earned rewards of personal hardships and a manly love of adventure. The recent exploits of some of those who have been out to East Africa are enough to disgust any decent thinking man with the very name of sport. Too many visiting "sportsmen," though it is a relief to think that among their numbers Englishmen are, happily, rare, seem to consider that unless they have killed the limit of game allowed on their licences they have not had a successful trip. Nowadays, the word "sportsman" in its true sense (to quote a recent writer and big game hunter in the "Field") "is becoming obsolete." Only too often does a running herd of game tempt those who should know better to empty their magazines, regardless of the range, and in consequence many a poor wounded beast, left to die in agony, must be entered by the Recording Angel to their account. I have wandered from my subject, but the matter is one on which I feel very strongly.

From what I have said it will be seen that those who wish, on visiting New Zealand, to stalk in the Wairarapa, should make inquiries beforehand as to their plans. New Zealanders are proverbially hospitable, and the *bona fide* sportsman, as distinct from the slaughterer, should have no difficulty in getting permission to shoot on the ground of some large runholder. So far as I know there is no Government ground at present available in this district where the stalker is likely to kill good heads.* The licence costs £1, which entitles the holder to five stags of not less than ten points. The stalking takes place during the rutting season, in March, probably opening early in the month, but it is liable to alteration.

THE NELSON HERD.

The Nelson herd is situated geographically between the Wairarapa and Otago herds, the country which they inhabit not being so densely wooded as the former district.

* According to Mr Donne the Haurange Forest Government Reserve is open for a limited amount of stalking.



NEW ZEALAND RED DEER
From a Drawing by H. Frank Wallace.



Frank W. Miller
1914

THE DEER OF NEW ZEALAND

“A stag and two hinds landed in February, 1861 ” (I quote again from my previous work) “from Lord Petre’s park in Essex, were the progenitors of the Nelson herd, and were consequently the first deer to be imported into the colony. Of their descendants I cannot speak from personal experience. I saw some fifteen or twenty heads, and they were almost without exception narrow, ugly and unsymmetrical. The herd is now working inland, and I hear that some good stags have lately been killed, though they do not approach the Otago heads in length or span, or those from Wairarapa in weight.”

The best heads come from the most heavily timbered country. The herd covers a stretch of country nearly 200 miles from north to south, consisting of varied terrain. The intending stalker should go to Nelson itself, where he will be able to secure all the information he requires. A £1 licence entitles the holder to six stags or bucks. The season probably opens about the third week in February.

THE OTAGO HERD.

Now we come to the Otago herd. The two stags and five hinds presented to the Otago Acclimatization Society by the Earl of Dalhousie in 1870 were liberated on the Morven Hills, and their descendants are the only deer in New Zealand which can claim pure Scottish descent. They probably number about 10,000 at the present time, and are scattered over the mountain chains situated on the main ranges and extending from Lake Wanaka in Otago to Lake Ohau in Canterbury. The home of the red deer in North Otago comprises very rough open ground, with big “slides” and rocky tops rising above heavily timbered valleys and slopes of snow grass. Stalking in such country entails really hard work, and to fill his licence of four heads the sportsman has to work hard. The best stalking-ground is situated at the head of the Hunter Valley and in the adjoining Makarora Valley at the head of Lake Wanaka, and here the best heads have been killed during recent years. The herd appears to be working to the north-east via the Hopkins and Dobson Gorges towards Mount Cook. Deer are numerous in the Ahuriri Gorge. The ground is divided up into blocks, which are allotted to stalkers in order of priority of application. This system has apparently worked well. So far, though, there has been at least one instance of a block being “jumped ” by the stalker on an adjoining block before the arrival of the rightful owner. The

THE GUN AT HOME AND ABROAD

Committee of the Otago Acclimatization Society very rightly punished these men by refusing to issue licences to them for stalking again. To reach the stalking-ground the sportsman leaves Dunedin in the early morning and reaches Clyde about 4.30 p.m. The distance to Cromwell, $13\frac{1}{2}$ miles, is covered by coach, and the Clutha River ferried the following morning. A drive of 35 miles brings him to Lake Hawea, 25 miles in length. Messrs Taylor have recently started a service of motor launches, which add considerably to the comfort of the journey. From Hawea the road lies straight up the Hunter Valley. The licence costs £4 and entitles the holder to four stags, carrying not less than eight points. It is possible, I believe, to arrange for a second licence, though in all probability the hard-working stalker who means to kill first-class heads will scarcely have time to kill eight such stags.

The season usually opens during the first week in April and, owing to the weather, lasts not more than a month or so, though legally deer may be shot until the end of May. These months, of course, correspond to our autumn.

THE RAKAIA HERD.

I should mention, in addition to the three herds I have already described, the deer found in the Rakaia Gorge, Canterbury. These are descended from stock imported from Stoke, in 1897, and grow the heaviest and largest heads of any stags in New Zealand. In fact they equal in length of horn the Hungarian and Galician heads. I have no record of their weights, but have little doubt they approach the heaviest European specimens in this respect also.

Geographically they are situated in mountainous country about midway between the Nelson and Otago herds. The winters are shorter than in the latter district; the grass feed is not so good, but the bush feeding much better. The first stags in this herd were killed in 1907. Never having stalked in this district myself, I cannot speak with personal authority. I believe, however, that much of the stalking takes place on the river flats in long grass where spying is a matter of great difficulty. This long grass, which is a feature of the Canterbury country, reaches as high as a man's chest.

Any person may apply to the Canterbury Acclimatization Society for a licence to stalk in the Rakaia, and their names are drawn for, as the number of licences granted is very limited.

It would, perhaps, be as well that I should say a few words as to expenses.



NEW ZEALAND DEER.

Shot by Lt.-Col. Montagu Cradock, C.B.

PLATE CXVIII.

THE DEER OF NEW ZEALAND

Guides cost £1 per day and a cook 10s. The charge for the launch up and down the lake is £2. The total cost, including extras, provisions, hire of tent, etc., works out at between 35s. and 37s. per day. £50 to £60 would cover the entire cost of such a trip from Cromwell. If the party consisted of two persons the expenses, of course, would be individually reduced to some extent. With regard to rifles, every one has his own ideas. Any good small-bore rifle is quite sufficient for the purpose, though my own particular fancy is a .275 Rigby Mauser with pointed bullets. A telescope is absolutely essential. The usual method followed when stalking is to pitch a base camp and then go off to various likely spots with your guide, a couple of blankets and two or three days' provisions.

There is considerable difficulty sometimes, owing to the rough ground, in getting a stag's head home to camp. There is no whistling up a gillie with a pony! If the gillies were there, which they are not, as we in Scotland know them, the steep hillsides would be absolutely impracticable for a pony. The only way is to carry the head down, with any venison it is possible to take. The best way to pack a head down the hillside is to cut the neck skin up to between the horns. Then sever the head from the vertebræ at the base of the skull, wrap the skin round under the jaw and bring the loose end over the front of the face and tie it between the horns. The head can then be balanced on the stalker's back, the brows coming over the shoulders and the horns curving at the sides.

A 50 feet length of $\frac{1}{4}$ in. to $\frac{1}{2}$ in. strong Manila rope is not a bad thing to have with you. It is useful for negotiating nasty rock corners and for facilitating the carriage of a head.

With regard to clothes:

Tweeds are apt to get torn in the rough bush, speargrass and boulders. Stiff drill khaki is good, and strong shooting boots, with plenty of good steel cone-headed nails, with a wide welt, are sound footgear. Puttees are the best things for protecting the legs. Knickerbocker stockings such as are worn in Scotland are worse than useless.

An ordinary cloth cap or, better still, a good soft felt hat is about the best thing to wear on one's head, though the latter is apt to get knocked off when hunting in bush country.

If expense is no object a tent may be taken from home, as I have no very tender recollections of the New Zealand tents on a wet night. A heavy tent cannot, of course, be taken into rough country, but a sound waterproof tent makes a lot of difference to one's comfort at the base camp.

PRESENT CONDITION OF DEER IN NEW ZEALAND

IT is not a particularly difficult matter to establish a herd of red deer in a mountainous country which is suited to them, as is New Zealand; the trouble is to maintain a high standard of heads in after years. In this respect the New Zealand authorities do not appear to have been altogether successful. I have heard of no particularly good Wairarapa heads being killed recently; I do not think the Nelson herd ever possessed such a thing; whilst the Otago deer, though the possessors of many fine heads, have been allowed to fall into such a state of bad management that it is very doubtful if they will ever, in spite of very costly remedies, be extricated.

No account of the deer of New Zealand would be complete without some mention of the development of the Otago herd, and as some valuable inferences may be drawn I propose to deal rather fully with the subject.

When I visited the country seven years ago I was astonished at the number of inferior deer to be seen. I had never stalked in Otago before and, as one always leaves new ground having learned where not to go, I am quite prepared to admit that I might have done better by going elsewhere. The Dingle, where I stalked, is not far distant from the Morven Hills. Here the deer were first liberated, and here at the present day is accumulated much of the bad stock which it should be the aim of the Otago Acclimatization Society to get rid of. New Zealanders and all sportsmen who visit their country owe a great debt to the Acclimatization Societies. They have accomplished much in the face of many obstacles, but the particular society with which I am dealing has left undone many things that it ought to have done, even if it has not done those things which it ought not to have done.

I criticized, in a letter to the "Otago Daily Times," the state of things which I found existing in 1907. In a fortnight's stalking I saw sixty-one stags, ten of them being young six-pointers. Of the remaining fifty-one, thirty-three might be called normal, ten were pronounced malforms, one was a switch, while the remaining seven had but one horn apiece. Of the thirty-three I have called normal, thirteen were probably old stags going back and four carried heads of seven points. This brings the total down to sixteen good stags, and of this number three were shootable

PRESENT CONDITION OF DEER IN NEW ZEALAND

beasts. One was a royal which I failed to secure, the other two, a big nine-pointer and a twelve-pointer, I killed. A friend of mine saw a great many malforms, and another stalker no less than five stags in one corrie with only one horn apiece. A great many deer were in poor condition. On these facts I based my indictment. A heated argument followed in the press, but the general consensus of opinion justified my plea that very drastic measures were necessary to improve the stock.

Various reasons have been assigned as the cause of the deterioration. Many people think that the malformed heads, etc., are due to the rough nature of the ground. They say that the deer, forcing their way through thick undergrowth and over steep and rocky ground, injure the antlers while they are still soft. That this view can be maintained I do not believe for a moment. In my opinion it is due very largely to inbreeding and to the numbers of the deer being out of all proportion to the extent of ground they are called upon to inhabit in this particular locality. The best stags, finding food scarce, wander further afield, and as all the best heads are killed at the other end of the range I do not think this view an unreasonable one to assign as the cause of the deterioration.

At any rate it was decided that large numbers of deer must be destroyed, a course which I had advocated from the outset. Mr Allan Gordon Cameron, whose name is familiar to all stalkers, in a letter to Mr E. Hardcastle, an enthusiastic New Zealand stalker who shared my opinions, wrote as follows: "There cannot be the least doubt that you have adopted the only scientific method of raising the quality of your stags, viz., to weed out the rubbish by an organized effort directed by a committee of experts." This was in 1908, after my old guide Buckley, with another good shot who knew the country well, had been out after malforms and killed, in something like six weeks, over a hundred "rotten" beasts. At a rough estimate one in every four seen was killed. They advised a great many more being killed than they were allowed, and were willing, to shoot. In the latter part of 1909 they were employed to shoot a limited number of deer, and again in the early part of 1910 they were allowed to shoot more and retain the hides for sale. In this way they hoped to recompense themselves for their work and defray the cost of ammunition and other expenses. In the end they were losers. In 1911 they made an offer to kill a thousand deer for £130. This offer was refused. With each year that organized operations are delayed the difficulties will increase and though a committee visited the locality under discussion on behalf of the Society, and "were satisfied that

THE GUN AT HOME AND ABROAD

splendid work had been done, but were impressed with the fact that more vigorous work was necessary," I think I am correct in stating that during their brief visit they hardly saw a deer and certainly never penetrated into the heart of the country where the rubbish exists. Yet, if such was their report after the briefest of brief examinations, what would it have been if they had camped out on the hillsides for a month or more ?

At last, however, the necessity for the real extermination of the " rubbish " seems to have impressed itself on those responsible. I quote from the annual report of the Otago Acclimatization Society, 1913:

" A contract has been let to shoot 300 head below the Dingle to Timaru Creek, and 300 in the Hunter, to be finished by September 30, at the rate of 2s. 3d. per head. Since the question of ' culling ' or ' thinning out ' was first taken in hand in 1910 a sum of £711 has been expended on this work. The wisdom of this is now beginning to show practical benefit, and establishes the necessity for its continuance on judicious lines in proportion to our means. This is a matter the urgent necessity of which we have endeavoured to impress upon our neighbours, the Waitaki Society, and can only hope that they will not fail to realize its importance. Their herd and runs being in close proximity makes concerted action indispensable."

My early remarks on the subject have been fully justified, and as the Government, in 1912, made a grant of £100 to the Society to aid them in their efforts at extermination, it is to be hoped that they will continue to assist in the future.

It is no use importing fresh blood from England or elsewhere until the evil on the spot has been first eradicated. The great stronghold of the bad stock is in the Morven Hills, as I have already said. It is here that the deer should be killed, not away up the Hunter Valley, where any mal-forms there are are those which have wandered away from the country below the Dingle. It is common sense, after all, and exactly what is taking place in Scotland under somewhat different conditions. A given area of grazing land will only support a limited amount of stock, and a stag with a poor head will eat just as much as the finest royal that ever lived. If he finds that he cannot get food he will try and wander off till he meets with what he wants. So does a little leaven, in this case represented by an unhealthy stock of deer, leaven in time the whole. Killing off a few stragglers will do no good at all. There will be no material change in the condition of the deer in certain districts until the whole of the rotten stock is absolutely

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wiped out. A New Zealand gentleman summed up the whole matter in one sentence six years ago. His remedy was drastic, but it was the right one. He boldly said: "The Morven Hills, Timaru Creek, Lower Dingle, Mount Jones and Longship districts should be practically cleared of deer." Many good stags, some of them very good stags, are killed annually, but such a state of things will not go on for ever.

The great thing to do is to stop the wave of migration, and I hear that the runholders, who have taken up new leases in the vicinity of the Morven Hills, talk of taking matters into their own hands and killing everything they see. Such a step would probably do more good than harm.

I could quote endless statements made by different stalkers as to the spread of the "rubbish," but it is unnecessary. Anyone who knows the country knows that the evil is there and that it is spreading.

I do not wish it to be thought that I am condemning New Zealand as a stalking-ground. Many fine stags with splendid heads still exist there and will continue to exist for many years. The view that I wish to enforce is this. Every year the "rubbish" accumulates and every year it is more difficult and more expensive to get rid of. With every fresh birth in certain localities the impetus to wander will become greater and the difficulties in the way of restricting the migration of bad stock greater. If allowed to go unchecked, the numbers of deer, and consequent inbreeding, will increase to such an extent that the whole deer country will be affected and the condition of the deer sink to that which prevails in Scotland at the present time. There will, however, be this difference. In New Zealand there will be no wealthy private owners of forests to lavish money on the care of their animals, and good stags' heads will be a greater rarity there than they are at home.

New Zealand is widely advertised as a paradise for the visiting sportsman, apart altogether from the magnificent prospects it offers to those who have made their home there, and who are a nation of sportsmen at heart. Deer-stalking is one of the finest sports in the world, especially as carried on in the hills of North Otago. If the Otago Acclimatization Society and the Waitaki Society combine, with the help of the Government, to check an evil which I believe is still increasing, they may in future years still make good their boast that they have in their keeping one of the finest red deer herds in the world.

NEW ZEALAND STAGS' HEADS

ANYONE well acquainted with stags' heads would have but little difficulty in assigning to their respective localities typical heads from the three, perhaps I should say four, principal red deer herds of New Zealand.

The Wairarapa heads, heavy and massive, with comparatively short horns and many points, differ as much from the Otago heads, with their wide span, long horns and, as a rule, comparatively few points, as do the latter from the narrow, ugly, unsymmetrical horns of the Nelson deer. Last comes the Rakaia Gorge herd, and whether these can now lay claim to be considered pure wild deer, after being established for about seventeen years, I leave the reader to decide. Long curving brows and tremendously developed back points in addition to massive beam are characteristic of these heads.

According to Mr Hardcastle, who quotes from an article which appeared in the "Field" (September 15, 1906), the Windsor herd has been replenished at different times from English, Scottish, German and probably Danish stock. "The result has produced, in the Wairarapa herd, stags that are remarkable for their massive antlers, some of which are of the German type, and others again more resembling the Scottish form. The antlers do not grow to great length, but some are very wide in spread over all (i.e. the greatest outside width, a characteristic of German heads), and there is a good proportion of Imperials, the most number of points recorded being twenty-two." This head now hangs in the Wellington Club, and is, as may be imagined, excessively ugly. It was killed by Mr A. Grace. I have only come across one Wairarapa head which reached 40 inches in length. The majority of the best heads range from about 34 inches to just under this figure. One or two horns may measure 7 inches in circumference.

The stags are clean earlier than in the South Island, and their heads are not so much affected by climatic conditions. In Otago the majority of the big stags winter far up in the gorges under the Alpine ranges and are consequently more under the influence of a late and stormy season. A mild winter and early spring means for them, as it does for our Scottish deer, good heads; a severe winter and long late spring a setback to the development of their antlers. The South Island stalkers are proud of maintaining that their herd is the only one which exhibits the true Scottish type of antler,

NEW ZEALAND STAGS' HEADS

though they grow to much greater length than those of any wild stag which has been shot in the British Isles. The heads are symmetrical, well-balanced, as a rule, and with good lower points. I do not think it can be said that there is any very regular formation about the tops in the case of the more fully developed heads. Fourteen-pointers may either fork as do Irish heads, with a double pair of forks on each top, or "bunch" into a cluster of points. The cup formation is rare, but so it is in the majority of Scottish heads at the present day. A most interesting feature of the Exhibition of British Deer Heads which I organized for "Country Life" in 1913 was the almost complete absence of cups on the 140 odd Scottish heads exhibited. The only head with perfect cups on each horn was a beautiful little royal from the Isle of Lewis.

The Nelson heads are dark and fairly strong in the beam, but are not to be compared with the best heads from the Wairarapa and Otago. The original type of head has been preserved faithfully, as may be seen by comparing present-day Nelson heads with that of the first stag imported, which was found dead about 1874, bearing twenty points.

The best Nelson head of which I have measurements is a royal with 39 inches' length of horn.

A very common question is: "What constitutes a first-class stag's head?" This, within certain limits, is entirely a matter of taste. An expert would pick out the six best heads in a room, but he would be guided entirely by his own taste in deciding which of those heads he would shoot first were he lying within a hundred yards of them in the open! One man would go for points, another for length of horn, another for span, another for thickness and roughness of horn; and the stag has yet to be born which combines all these qualities in such a way as to reconcile conflicting opinions and enable a unanimous verdict to proclaim his head the best in existence. Measurements, of course, are the chief factors in deciding the rival merits of heads. These, however, do not take into account the infinitesimal curves and gradations which are of the greatest importance in judging a trophy. At the Vienna Exhibition of 1910 good judges, such as Mr H. J. Elwes and Mr J. G. Millais, considered that not nearly enough attention was given to "symmetry," an opinion with which I entirely agree. Beauty of form is a most important feature in estimating the quality of a head, and for this reason I consider the Otago heads are far superior to those killed in the Wairarapa, though doubtless there are many who will disagree. A short thick head with a large number of points, often

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very short, is unworthy to be classed with a long symmetrical head formed on naturally beautiful lines and with a full complement of well-developed tines. To take an example from Scottish heads, with which stalkers at home will be more familiar than with New Zealand trophies, the much-vaunted Glenquoich twenty-pointer, or the seventeen-pointer killed at Killilan a few years ago, do not compare very favourably with the beautiful fourteen-pointer belonging to the Hon. Mrs Gordon Cumming, or that killed at Barrisdale in 1898.

All good heads would measure well and the standard measurements are as follows:

Length of horn, taken from the lower edge of the brow or coronet at the base of the horn, over its edge and along the outside curve of the horn to the highest tip.

The beam or circumference in the red deer and wapiti groups is taken between the bay and tray—that is, between the second and third points. Between the brow and tray where the bay is absent.

The span is the greatest width between the main beams taken in a straight line.

Other measurements are of value when taken in conjunction with these, but of little use alone. The outside span depends entirely on the angle at which the points diverge from the main beam. Measurements are frequently given “round the coronet” and “below the brow point,” and though these may be of interest in exceptional cases, they are of no real value in estimating the quality of a head. It is quite possible to add an extra two or three inches to the length of horn by a careful manipulation of the tape and a little haste during the more delicate moments of the operation! It is also an easy matter to increase the span if the tape is carried from the inside of the top points to a spot somewhere about the inside of the tray! Such slips, however, are easily corrected and cannot be regarded as genuine measurements. It is, of course, useless to send measurements of a head to be recorded as “length in straight line” or “from coronet to below tops.” Such figures are of no value in estimating the size of a head. A steel tape should always be used, as those made of other materials are unreliable. A steel tape is more difficult to manipulate, but it neither shrinks nor stretches.

Many fine heads have been killed during the last seven years in Otago. Most of them come from the head of the Hunter Valley, which is hemmed in by high ranges, involving a climb of four or five thousand feet for the

NEW ZEALAND STAGS' HEADS

stalker. When the Hunter River rises after heavy rains the bed of the valley is inundated. Scattered clumps of bush straggle up the hillsides in patches, and as the valley lengthens these develop into a big wood towards Mount Ferguson, the home of many fine stags. The Makarora again is heavily wooded. Fine as are many of the recent heads, I doubt if any have been killed superior to some which I saw in the Christ Church Exhibition of 1907, with one or two possible exceptions. Undoubtedly of these the best all round was a magnificent royal killed by H. E. Hodgkinson in 1901. It is one of the finest red deer heads I have ever seen, a perfect normal stag, combining long, well-developed tines with great length, heavy beam and unusual, indeed record, span. The left bay is a little weak, but the head otherwise is perfect. Other heads which run this beautiful trophy very close are C. D. Hodgkinson's fourteen-pointer and a splendid royal killed by my friend, Mr Melville Gray. This head resembles Hodgkinson's royal very closely, though the span was not so good and the lower tines were short.

The head with the greatest number of points killed in Otago is a twenty-pointer killed by J. Faulks in the Makarora in 1912, with 40 inches' length of horn. In this season, owing probably to the mild winter and early spring, heads with eighteen and nineteen points were also shot.

An eighteen-pointer killed by Baron von Kusserov in 1908 formerly held the record for points. H. E. Hodgkinson killed a seventeen-pointer with palmated tops, a peculiarity I noticed in only one other Otago head, a fifteen-pointer.

In 1911 a thirteen-pointer was killed by J. Forbes in the Hunter Valley, which is given, according to New Zealand measurements, a length of horn of $49\frac{1}{4}$ inches. I have not seen this head, and, without in the least wishing to question the good faith of those who are responsible for it, am doubtful of this being correct according to our standard of measuring. It is a narrow "hoop" head coming in very close at the tops. I have heard rumours of a 50-inch head killed last year in the Hunter Valley, but have obtained no definite information with regard to it.

The most remarkable head ever killed in the Rakaia Gorge was shot by Mr C. Williams in 1912. In addition to great beam ($6\frac{1}{2}$ inches) the horns measured respectively, right 48 inches, and left $47\frac{3}{4}$ inches, which is quite exceptional even for a New Zealand stag. New Zealand measurements make Mr Williams' head an inch or so longer. Those which I give are the

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official measurements taken at the Exhibition of British Deer Heads by Rowland Ward.

In the following table I give measurements of four of the most remarkable Otago heads killed some years ago, and those of ten heads killed during the last few years, which are worth recording either as the best heads of the year or for some exceptional feature.

Owner.	Points.	Length.	Beam.	Span.	Spread.	Date.	Locality.
H. E. Hodgkinson	6×6	46	5½	37½	—	1901	Dingle.
Melville Gray	6×6	46	5½	31	—	1901	Timaru Creek.
C. D. Hodgkinson	7×7	44½	5½	33½	—	1901	Dingle.
H. E. Hodgkinson	17	41	5½	31	—	—	"
Baron von Kusserov	18	41	5½	—	38	1908	Hunter Valley.
J. Forbes	6×7	45	—	—	—	1909	"
P. F. Hadow	6×7	45	5¾	—	40¾	1910	" "
J. Forbes	6×7	49½	5	—	32½	1911	" "
J. Faulks	20	40	6	—	—	1911	Makarora.
A. Cowie, junr.	19	38½	5	—	29	1911	Hunter Valley.
C. E. Lucas	7×7	43½	5¾	30	—	1912	" "
C. E. Lucas	7×7	43	5½	32¾	—	1912	" "
J. Faulks	7×7	42	5½	—	50	1912	Makarora.
E. C. Studholme	6×6	43	5½	—	—	1913	Hunter Valley.

Of the fallow deer in New Zealand I cannot speak from personal experience as I have never hunted them there. They are plentiful on the Blue Mountains near Tapanui in Otago and on the Maungakawa range in the Waikato, Auckland Province, in the North Island. On the beautiful island of Motutapu in the Hauraki Gulf close to Auckland there are about a thousand head of fallow deer. This island is private property. A herd has been established at Albury near Timaru, South Canterbury, with stock obtained from Motutapu, and there are also fallow deer on the Lower Wanganui on the Totara Flat near Hokitika and at the head of Lake Wakatipu, in addition to an old-established herd in the Nelson Province. These are all in the South Island.

The progenitors of the Maungakawa herd, to illustrate the difficulties of transport in New Zealand in the 'seventies, "had to be taken a two days' voyage in a small paddle steamer up the swift and flooded Waikato River to the head of navigation, then loaded on sledges and carted a thousand feet up a steep and slippery mountain range. A cavalcade of Indians accompanied the sledges, dismounting to give assistance to the drivers in the worst places, and asking many curious questions concerning the strange animals. They looked on them as magnified goats, but conceived that they

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might possibly be man-eaters, and one conservative old chief expressed the firm conviction that they were introduced by the white man for the express purpose of devouring the Maori people." One wonders that they ever reached their destination alive.

I have seen no New Zealand fallow bucks' heads which surpass the best examples from Petworth, Uppark, the New Forest and Drummond Castle. The longest horn of which I have any measurements is $29\frac{1}{2}$ inches, and the head carried seventeen points. It was killed at Waikato. The longest Tapanui head is given as $27\frac{1}{2}$ inches and the greatest number of points twenty-six. Better heads may have been killed since.

OTHER NEW ZEALAND BIG GAME

THE New Zealand Government and the Acclimatization Societies have not confined their attentions to red and fallow deer alone. Despite the difficulties encountered during the initial stages of acclimatizing different species they have successfully established other varieties.

Fourteen or fifteen years ago moose were turned out in the forests on the west coast of the South Island. A few years later the Duke of Bedford sent out some Caucasian tur which were liberated in the vicinity of Mount Cook. Sambar have been turned out in the North Island and some Japanese deer near Rangitaiki, between Napier and Lake Taupo. Some Axis deer were introduced from India, and freed near Palmerston South. By 1907, however, they had all been shot out, a most disgraceful proceeding. Mr T. E. Donne, an enthusiastic sportsman, secured a fine consignment of animals about ten years ago from the United States. They included twenty wapiti, ten being a present from Mr Roosevelt, nineteen Virginian deer and five blacktail deer. The wapiti were turned out at the head of George Sound, one of the great forest-girt fiords, situated on the west coast of Otago. Here there exists a large area of country, over two million acres in extent, known as the Fiordland National Park. The Virginian deer were divided between the country at the head of Lake Wakatipu and the wooded hills of Stewart Island. The blacktail were liberated on the Kamianawa ranges between the east coast of the North Island and Lake Taupo.

In 1907 the Emperor of Austria presented eight chamois to the Government of New Zealand, from the Austrian Tyrol. They were, I believe, liberated in the Southern Alps. All these species foreign to New Zealand have been strictly preserved of late years, at any rate nominally, though I hear on good authority that licences will be issued some time in the near future to kill a limited number of wapiti. Some very fine heads have been seen, equalling, according to accounts I have been given, the best North American wapiti heads. The country is very dense and the stalker would have to work hard to ensure getting a good trophy.

There was some talk at one time of attempting to acclimatize some of the great Asiatic sheep, but such an outcry was raised by settlers, who feared they would interbreed with the domestic animals, that the idea was

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abandoned. Even were they to survive the voyage it is doubtful if they would establish themselves securely.

The Duke of Bedford presented some tahr and Japanese deer to the New Zealand Government which are protected. Wild cattle, goat and pig are also to be obtained and may be shot without a licence. The visiting sportsman, however, should be quite certain what he is shooting with regard to wild cattle, otherwise, though there are still unbranded cattle running wild, he may find himself in the same predicament, to quote Mr Donne, "as the gallant English captain who shot a valuable pedigree bull which belonged to a farmer with a nasty temper!"

H. F. WALLACE.

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